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* AN EXTREMELY SCARCE BOOK *and the first dealing with gardening in Scotland. This copy lacks the last page of the Calendar.*

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THE John Jamieson

SCOTS GARD'NER

IN TWO PARTS,

The First of Contriving and Planting GARDENS, ORCHARDS, AVENUES, GROVES: With new and profitable wayes of Levelling; and how to Measure and Divide Land.

The Second of the Propagation & Improvement of FORREST, and FRUIT-TREES, KITCHEN-HEARBES, ROOTS and FRUITS: With some *Physick Hearbs*, *Shrubs* and *Flowers*.

Appendix shewing how to use the Fruits of the Garden:

Whereunto is annexed

The GARD'NERS KALENDAR.

Published for the Climate of SCOTLAND

By JOHN REID Gard'ner.

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28. Octobris 1702.

Edinburgh, Printed by DAVID LINDSAY, and his Partners, at the foot of *Heriot's*-Bridge, 1683.

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To all the Ingenious

PLANTERS

In SCOTLAND.

I Desire you to peruse this Book, for there are many things in it of singular use, which I could never find in any, and the substance of what I could find material (in the Practical part of Gard'nery) improven and applyed home; whereby I presume it may be Satisfactory to you when you operate in the choise of Husbandry. Several weighty reasons induced me hereunto; as, the great necessity of right contrivance, whereby you may do your works, both orderly and cheap; The in-expressible need of Incloſing and Planting, whereby you may improve your estates to best advantage, both in Profite and Pleasure. And becauſe the many Books on Gard'nery are for other Countries and Climates, and many things in them more speculative than practical: this ensuing treatise may the rather be acceptable; albeit obnoxious to the undoubted censure of Criticks, yet when I reflect on my Innocency in the design therein (the good of my Country) I receive Encouragment. And that my Endeavours may prove Succesful, is the earnest desire of

JOHN REID.

CORDA SERATA FERO
George Lockhart of Carnwath

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The GARD'NERS CALENDAR,

Shewing in each Moneth

When to performe the particulars, &c.
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THE

THE FIRST PART

Treating of Contrivance.

CHAP. I.

How to make the Works about a Houſe Regular.

First and a Second part I thought neceſſary, that I might diſcuſs things in their *order:* for a Houſe muſt be built before it be furniſhed. Theſe who inclines not to read this may ſtep foreward to the Second; perhaps there they will find Satisfaction, albeit others may be as deſirous of this, who have any works to make.

My deſigne by contrivance, is to prevent the conſequence of Inadvertancy, or the abrupt procedure in Incloſing and Planting.

2. Here in the entrance you may take a view of a Houſe which I have *Invented* (See Fig. 1.) it is but little, yet very commodious & Cheap. There is *only* 4 Rooms on a Floor (you may have Cloſets within the wall, although not here demonſtrated) all which enter off the Stayr (yet comunication betwixt) and the door is in the midle, & there is 10 ſteps up to the firſt Story, (which is hall or dining Room, withdrawing Room, Bed-Chamber and Waiting-Room) and 10 Steps *down* to the lower Story, which is half under ground, and vaulted, this is Kitchen, Cellers and Ladners, &c. That above the dining Room ſtory may be Bed-Chambers, library and with-drawing Room: and above theſe garrets for wardrops. The Roof may be in three ſo as the midle part may be flat and covered with lead and the two ſides more ſteep & ſlated: there is alſo a Stayr coming down

from the hall without to the parterre of graſs and gravel, on whoſe corners ar two Pavilions opening without the line of the Houſe and ſets off in place of Iammes; one of which may be a Store-houſe, and the other a Dove-houſe: the Stables, Baking and Brewing houſe ar on the oppoſite ſide, moſt conveniently placed, as hereafter I ſhall demonſtrate.

3. Situate your Houſe in a healthy Soyl, near to a freſh-ſpring, defended from the Impetuous-weſtwinds, northern colds and eaſtern blaſts: and mind regularity, *viz.*

Make all the Buildings and Plantings ly ſo about the Houſe, as that the Houſe may be the Centre; all the Walks, Trees and Hedges running to the Houſe.

As the Sun is the Centre of this *World: as the Heart of the man* is the Centre of the man: as the noſe the Centre of the face: and as it is unſeemly to ſee a Man wanting a leg, ane arme &c. or his noſe ſtanding at one ſide the face, or not ſtreight, or wanting a cheek, ane eye, ane eare, or with one (or all of them) great at one ſide and ſmall on the other; Juſt ſo with the Houſe courts, Avenues, Gardens, Orchards, &c. where regularity or uniformity is not obſerved.

Therefore whatever you have on the one hand, make as much, and of the ſame forme and in the ſame place, on the other.

4. But if you would work right, beginne orderly, that is, *find* the central line by erecting a perpendicular on the midle of the Houſe-front, to extend as farr both back and fore as requiſite: hence you may draw parallels, Meaſure and Stake out your Avenues, Gardens, &c. as you pleaſe: ever minding to Meaſure alike at both ſides of the Central line; How to find this Central line and to ſet off parallels is taught in Chap: 3: Sect: 1. and 2.

5. Yet for further Illuſtration take ane example by a draught of my own inventing (ſee fig: 2.) which if rightly underſtood may be applyed diverſly and Improven elegantly.

It is here in a ſmall Scale. the Houſe is in the Centre, and at B, round by the Houſe is Baleſters, the Common Avenue is by N, and

and ends in a triangle, *c*, is the outer Court, and in the two triangular Courts marked with O, ar placed the office-houſes moſt notably (with their back part to the Court *c*,) opening without the line of the Houſe: So diſmounting at the gate of the Court (through which you may walk on foot to the Houſe) let the Horſes be taken about to the Stables by the Way the ending of the Avenue leads. The two plots P, may be Pondes, the two with G, Cherrie Gardens: a proper place alſo for gooſberries, Currans, and Straberries. On the ſouth ſide the Houſe there is the pleaſure or Flower-Garden called the *Parterre*, at the two ſydes thereof Kitchen-Gardens marked with K, then another Walk ending in a Semicircle at S, Leading out to the Lawn or deer Park. The viſtaes or walks of view that runs from the 4 Angles of the Houſe ar very pleaſant *and convenient, and ar good Shelter*; for which cauſe there ar two Thickets on the north ſide marked with *t*, on the ſouth ſide are two ſuch marked *a*, for Nurſeries, and at E, and W, ar two Orchards. The whole is environed with two rowes of Forreſt Trees without the wall: And if the paper were large I would ſhew you that the Park Wall *ſhould* be parallel to theſe, that is, every where equidiſtant from the Houſe its Centre at leaſt, the whole an *octagone* near to a regular *polygon* conſiſting of equal ſides & Angles. The walks with their fences (being run foreward from all the 4 ſides and 4 Angles of the Houſe till they touch at the midle of each ſide of the Park Wall,) ſerves in the Park for diviſors: which diviſors may be hawthorn Hedges, and theſe in the Gardens holly, except the Court in the entrie and office-houſe Courts, me thinks walls ar requiſite there. Alſo there ſhould be ane aſcent to the Houſe, (if poſſible) as at the firſt Court gate 2 ſteps, at the 2d 4 ſteps. &c. But Leaving it to let every man apply as his ground and ability will beſt admit, I come to ſpeake of regularity, where confined.

6. But as to work or make regularity among confirments requires Ingenuity; ſo is thered ifficulty in teaching the ſame, becauſe of the great variety of places: and being that I know not how to give precepts for it (except what is ſaid above of the Centre and Central line)

line) therefore I ſhall only inſtance in by example.

As where I was confined, to add what I will, but to diminiſh non. I viewed the works, and found ſeveral regular and Irregular things don on the one ſide the Houſe, and nothing on the other anſwerable: therefore I Staked out the ſame on the other; ſtill where I found an Irregular piece on the one ſide, I ſtaked out the very ſame on the other; and thus two Irregularities produced one uniformity.

Or where there had been much wrought for ane Avenue, but did not Front the Houſe right, by reaſon of a precipice on the weſt hand. I got on the houſe top, viewed the ground immediatly, ſaw that I might turn my face towards the Eaſt and get ſtately Avenues with Gardens on each hand at pleaſure, and the ſaid precipice turned at my back.

But to draw *any place firſt on Paper*, as *they ſtand*, we ſee faults plainly, and how to help them accordingly: Therefore to aſſiſt you further in making your works orderly I ſhall ſhew you in the following Chap.

CHAP. II.

How to draw by the Scale.

All draughts not drawn by the Scale ar but ſuppoſitions; the Scale makes them ſtand directly on Paper as on ground, or would ſtand, if put upon it: therefore of ſingular uſe in contriving, you ſhould have ane eye to the conſequence of all your undertakings, leſt you run Inadvertantly into a ſnare: for when you have determined or ſetled on the contrivance, perhaps hath gone a great length in working the ſame, yet as you proceed (one thing making way for another) you may come to ſee a farr better way, and ſo to overturne moſt or all that is done, to get your new and better way accompliſhed; which oblidges you either to double pains & Charges, or otherwiſe, in ſaving the ſame, to ſit ſtill with a diſſatiſfied mind; all which may be eaſily and timely prevented by drawing & projecting on paper, as is ſaid.

2. You

2. You may make as many Scales as you think will be needful, insomuch that when you have a draught at any time to draw, you have no more to do, but by Arithmetick find which of them Scales you must draw it by. Therefore make a Thinn broad rule 2 foot long Pear or Aple tree, Red of Plumtree, Planetree, Boxwood, or Brass which is best: put as many on bothsides as it will contain. I make most use of a Diagonal Scale, (see fig. 3.) its done by dividing the Inch into so many equal parts, as 8 in the Inch, 30 in the Inch, 100 or 200 in the Inch, the figure and Multiplication will informe you for 5 divisions drawn the length of the Rule and 7 in the Inch; the other way is a Scale of 35 in the Inch, 5 times 7 is 35 and so furth. If your Rule be 2 foot, there may be 2 Lengthes on it, or as your largest Compass *may conveniently* reach. You may also make some of the common Scales, that is, divide the Inch the ordinary way in a straight line into so many equal parts (see fig. 4.) seeing the Diagonals hath only such as Multiplication produceth.

3. If you be to draw a draught, but knows not how to take your measures from the Scale, then if you know the measures on ground take so many divisions (off the Scale with your Compass) as you had feet, ells, or falls (whatever you measure by) and set on the Paper: example, if you were to draw an orchard whose lenth is 680 ells by a Scale of 200 in the Inch (as the upper end of *fig.* 3.) you are to consider how many times 200 is in 680, that so many whole Inches you may take on your Compass, and the odds or fraction you may get therewith from the subdivided Inch: here if you set one foot of the Compass at 6 and reach the other to *a*, which 6 half Inches is 600, and 8 divisions foreward on the subdivided half Inch is 80; the same you may place on the Paper & draw accordingly. Example 2. by the other Scale of 100 in the Inch, if you would set the breadth of 23 foot-walk on Paper, here it is not one Inch, therefore you must take but such a part of one Inch, *viz.* Set the Compass from *a*, at the end of the subdivided half Inch to *o* in the same, and thus it is on the Compass; therefore do as before. You may perceive that the 23 divisions on the Rule is the 3 from 20 foreward on the line betwixt 20

and 30 where the *0* is placed to make it plain. If your draught be so large that your Compass cannot reach its length, then you may divide the same by 2, 3, or 4, &c. and take the product on the Compass and set alongst so many times as was your divisor. This is so plain that it needs no exemple.

4. But if you have a draught to draw on one or many sheets of Paper, and you desire to draw it as large as the Paper will bear, not to go off; Then take the length of your Paper *in Inches*, by which divide the length of your ground whether feet, ells, &c. and the quotient shall be the Scale you must draw it by; that is, an inche divided into so many equal parts. Example, if you have a plot 360 foot in length to draw on a sheet common Paper 16 Inches: but to make it, keep a little within the Paper, *at each end call it 15 inches*; so 360 the length of the ground divided by 15 the length of the Paper gives 24: therefore take a Scale of 24 in the inche, and draw it by the same. Example 2. the breadth of a field 864 Falls, I desire to draw it on the $\frac{1}{8}$ of a sheet *viz.* 3 Inches. Divide 864 by 3, it gives 288, but this being too small, I take the $\frac{1}{2}$ thereof *viz.* 144 and drawes it by the same, mynding that each division on my Paper is 2 Falls on ground.

5. Or if you had a draught, and knowes not what Scale it was drawen by, if you know what ground it contains, the work is first, to measure it by a supposed Scale, and secondly to find a mean proportional betwixt the true quantity of Acres and that quantity found by the supposed Scale. And thirdly by the golden Rule say, as the quantity of Acres found by the supposed Scale is to the mean proportional: so is the supposed scale to the true Scale. Example, if you have a plot or field of ground containing 72 Acres, and you measure it by a Scale of 18 Falls in the inche, and that makes but $40\frac{1}{2}$ Acres, the question is what Scale was it drawn by? You will find the mean proportional betwixt 40. 5. and 72 to be 54 (as in chap. 8. sect. 6.) and as 40. 5. is to 54: so is 18 to 24. Thus it appears that the said plot was drawen by a Scale of 24 Falls in the inche.

Exam-

Example 2. If you have a plot (containing 14 Acres 64 falls, and measuring it by a Scale of 40 in the inche makes 90 Acres, what Scale was it drawen by? You will find (as is said) the mean betwixt 14.4. and 90 to be 36: therefore as 90 the Acres found by the supposed Scale, is to 36 the mean proportional: so is 40 the suppoſed Scale to 16 the true Scale. This tells that it was drawen by a Scale of 16 in the Inche.

6. But if you have a draught, and knowes not what Scale it was drawn by nor what ground it containes, so as thereby you might find its Scale, & you desire to diminish or Enlarge the same on Paper, and yet that it may bear the same shape and proportion in every respect.

You may divide or multiply every particular line or part of it: as if you would have it $\frac{1}{3}$ less, then divide each part by 3, and take one of these and set on the Paper. Or if you would have it twice as large, then double every part and portion of it, that is, take the double of each length and breadth on the Compass and set on the Paper and draw accordingly.

But if your draught be a Taliduce, Mapps, or the like, draw a squair by the outter edg thereof, and divide each side into so many equal parts, as you think fit; betwixt which draw parallel lines all through crossing from opposite sides, and notice what part of your draught falls within the precinct of each little squair, & so Copy it upon another Paper whether larger or lesser, as if you would have it one fifth less, take one fifth of the side of one of the little squairs, and therewith Lottrie or square your clean Paper. And likewayes take one fifth of length and breadth of each particular within each little squair, and the one fifth distance that such and such parts, creeks and angles are distant from any two of the angles of the same; and so place them accordingly in the lesser little squairs of your clean Paper.

7. When you designe to survey any plot of ground be careful in measuring the distances truly, and keep exact accompt thereof. You may make first a supposed figure on a Paper before you begin, that thereon you may write your measures, as you go along: as if it be a

Hexagon,*(see fig.* 27.*)* draw a figure at random containing 6 sides, and having observed the meridian on the ground (which you may either find by the Compass or let the central line of the House its perpendiculars or parallels serve in lieu thereof*)* mark down such on your supposed figure: then let the two men with the chain begin at any angle; the foremost may have 10 small sticks to thrust in at every length of the chain, & let the hindermost man gather them up as he comes along; and when all up, give them to his assistant to begin again, as before, calling that, one change (*still being carefull to go* straight betwixt the two ends or extreams) and when you come at the other end, compt how many changes, chaines, and links, as if the hedg *c. d.* be 70 Falls, write that down as in the figure, and so proceed to the rest observing the same methode.

8. But albeit you measure *round any plot or Field*, yet you must know how to find the quantity of the angles, and protract the same: therefore I shall shew you the most exact of all others and mechanical too. Example by *fig.* 21. When you have measured the length of the 4 sides of this Trapezia (as is taught) then measure also betwixt any of the two opposite angles, as from *c.* to *b.* or from *d.* to *a.* and then you may protract it only with your Scale thus: draw a given line on the Paper as *a. c.* and from your Scale take so many divisions as was the lenth of the hedg *a .c.* and set thereon; and take the lenth betwixt *c.* and *b.* on your Compass; set one foot in *c.* and discribe an obscure Arch at *b.* also take the lenth of *a. b.* and setting one foot in *a* make another Arch to cross the former at *b.* then draw the line *a. b.* likewayes take the length of the side *b. d.* on the Compass, set one foot in *b.* discribe an obscure arch at *d.* and take the length *c. d.* & with one foot in *c.* cross the former at *d.* then draw *c. d.* and *b d.* and so have you finished. By the same its easie to protract *fig.* 26. and 27 or any other, and this is my method of Surveying.

6. As for the dimensions of Circles, see Chap: 8. for having the Radius, you may easily find all things belonging thereunto.

As for straight lined figures, if you reduce them into Triangles, & measure the three sides of each, you may protract them, as is taught:

thus

thus Trigonometry or the doctrine of plane Triangles ſhewes, that having any three things in a Triangle, we may find the other three, either by the Scale or by Artificial Sines, Tangents, and Logarithims: as having three ſides, or three angles, or one Angle, and two ſides, or two ſides and one Angle, &c.

I will give you ane example by Fig: 20. ſuppoſe you would have the diſtance between B. and A. Firſt meaſure off from B. (at any ſide moſt convenient) ſo many ells or falls, the more the better, I ſhall here ſupoſe 384 falls to C. (as will appeare by a Scale of 400 in the Inch) and in ſetting it off, notice what degrees that angle makes by your prorector, then hold the ſame at C. with its Chord line on B. C. Turn about the Index till it poynt to A. notice what degrees it cutts, as ſupoſe 80. and write down: here you have the ſide *B. C. 384. the angle* A. B. C. 60. and the angle B. C. A. 80. (and by conſequence the Angle B. A. C. 40. *being its the complement to* 180.) therefore go to your paper and draw a given line as A. B. then open the compaſs to the radius of your line of Chords, & therewith ſetting one foot in B. Diſcribe the Arch D. E. I. O. likwayes take 60 degrees with your Compaſs off the line of Chords, & ſet from D. to E. on that Arch line, and by the poynt. B. and E. draw the line B. E. C. ſo ſhall the Angle. A. B. C contain 90. degrees. But if the Angle had fallen to be more than 90 degrees, then you may take it at twice (ſeeing the ordinary line of Chords has but 90) as if the Index had Cut 120. firſt take 90 upon the compaſs and ſet from. D. to I. then take 30 *and* ſet from. I. to O. which Angle. A. B. O. contains 120 degrees. But to return, as you ſet off the Angle at. B. ſo likewayes at the Angle. C. make an Arch and ſet off 80 degrees thereon, by which poynt and C. Draw the line. C. A. laſtly take the line B. A. on your compaſs (i. e. betwixt the poynt. B. and the poynt at. A. where the line. C. A. did cut the line. B. A.) and apply to the ſame Scale of 400 in the Inch, from whence you tooke the 384. and you will find the diſtance betwixt B. and A. to be 588 Falls: for,

As the Sine of the Angle B. A. C. 40 degrees . . 9: 808067
is to the Logarithm of the side B. C. 384 falls: . . . 584331
so is the Sine of the Angle B. C. A. 80 degrees . . 9: 993351
The summe of the 2d. and 3d. added . . 10: 577682
The first number to be substr: from this sum 9: 808067
To the Logarithm of the side A. B. 588 falls . . . 769625

If you would know how to find the superficial content of any plot of ground, or how to divide the same, or to lay out any quantity of land in what forme soever, &c. see Chap: 8. for, I hast to.

CHAP. III.

How to make Avenues and Walkes.

ALL walkes should front the gates or entries, whether they lead to a house, Garden, Gate, Door, Park, Wood, or highway. When you have determined on the end of the walk as the door of the house, in the midle thereof on the line of the House-front set off a perpendicular, to find the central line as aforesaid, see Chap. 1. Sect. 4 and for your more exact performance thereof prepare this Instrument, *viz.* take two straight Rules about 3 or 4 foot long, joyn them Crosswayes in other, so that the 4 Angles where they cutt may be exact squairs; then at each end of these, joyn a piece Rule standing up about 4 or 5 Inches, and in the exact midle of each of these pieces make a slit up and down, and in the midle of these slits a piece small silk threed; these being straight and perpend: up are excellent to view by. Place this cros on the head of the three footed Staff, hing a Plumb whereby you may plant it Horizontale upon occasion: on this you may also place your prorector with the box and needle, when you go to surveying, for every one has not a plane Table.

As

As to the Avenue, ſet one ſide of your croſs parallel to the given line (the Houſe-wall) this you may do with moſt eaſe, by taking one end thereof within the door till the ſide touch the door cheeks, and you may alſo view croſs by the ſide-wall backſight and foreſight, till it ſtand exactly Parellel thereto: then turne, and ſtanding within the door, view ſtraight out by the ſilk threeds, and ſo direct one to drive ſtakes all along ſo farr as you can ſee, in a ſtraight and perpend: line. You may alſo find this perpendicular central line, thô Walls, Hedges, Houſes, Trees &c. obſtruct, if you can ſee over them out at any Window or off the Battlement if there be any, otherwayes recurre to the Rules in Sect. 3. and 4.

And as by this Inſtrument you may raiſe any perpendicular, ſo by the ſame you may let perpend fall: for you may alter it hither and thither upon the given line, till it direct to the angle or point aſſigned.

2. The mid or central line of your Avenue being found out you muſt place your croſs thereon, and thereby ſet off the half breadth thereof at each ſide: do this at both ends and midle, that they be exactly Parallel; and therein drive ſtakes almoſt to the head. And when you come to marke out for the Trees, or to plant them, ſet a ſtraight pole at each driven ſtake, for your direction in going ſtraight betwixt the ſame.

If the length of the walke be confin'd, divide it by the diſtance you mynd to plant at; and if there be any odd, add or ſubſtract till all the diſtances be equal: which diſtance you muſt take on a chain (for a line will reach and ſhrink) and begin at one end, and go ſtraight to the other, thruſting in a ſmall ſtake at each length; minding to let both rowes go on ſquair together, that is, one on each ſide and viewing will find the other two, if there be fower rowes, ſee the Avenues fig. 2.

And though the ground be unevenly, yet you muſt hold the chain level: wherefore you may have a ſquair & Plumb fixed at your pole or ſtaff for your more exact performance thereof.

When

When you have ſtaked out the ground, prepare the rounding ſtring *viz.* a piece line doubled and tyed near the point of a ſtick, and ſo put the double on the ſtakes where the Trees muſt ſtand, and ſtreatching the ſame, make a ſcratch with the point of the ſtick round, and with a ſpade follow that Compaſs and make the hole. See the ſecond part of this Treatiſe, where there be directions how to prepare the ground and plant.

If you obſerve what is ſaid, you may ſtake out any kind of walk, having one line found; wherefore I ſhall ſhew you how to find out one line whatever obſtruct.

3. As firſt, ſuppoſe you would run a line or walke through a wood: when you have concluded on the end thereof, there erect a perpendicular as above, *and run it as farr into the wood as you* can; then at each ſide thereof ſet off a Parallel line two or three foot from the central line, or half the breadth of the intended walk: ſo ſhall you have three Parallel lines running on in ſtraight lines together. And where any one runns on a tree, run foreward the other two, and ſet it off again (when paſt the Tree) as it was Parallel to its fellowes, and ſo proceed till you be through the wood, or thickets, ſtill marking the Trees that falls in the intervall to be cut.

A ſecond way is by means of Lanthornes with burning Candles, in a calm night when dark hanged on ſtakes, you ſtanding in the wood may plant ſtakes at pleaſure, let the Candles furtheſt from you be higheſt, and remove foreward the lights as need requires.

4. But if both ends of your walk be determined, and you cannot ſee betwixt, by reaſon of Lengthes, Hills, Woods, Houſes, or ſome ſuch obſtruction, in ſuch a caſe let two having each a pole go to the midle or to ſuch a place betwixt where they may (by looking backſight and foreſight) perceive the two extreams, (where ſhould be a pole with white Paper on the ſlip boards to make the better appearance) turn your faces towards other, ſtanding at a large diſtance aſunder, but ſo as you may both ſee your reſpective objects. And let A direct B to ſet the pole in line with his and that at the North-end: and B direct A to hold in line with his and that at the South-end:

end: so each directing other by words or Signes; let both alter to and fro, till they have their desires at once; then shall these two and the extreams be all four in a straight line, whereby you may set as many as you please. This way I found out by experiment, and thinks it worthy a place amongst the Mathematicks.

But if you cannot see the two ends, when standing in the midle; although the Poles be never so high, then if it be Wood or Hedges, the foresaid Lanthrons and Candles will do the busines.

But if the obstructions be Hills, Walls, or Houses, for which you cannot see, standing in the midle, as a-foresaid, neither by Lanthrons, nor yet by high Poles; then do by Parallels thus: set off a parallel line so farr, as that it may run quyt beyond the obstruction, (on the side most convenient) then set in the parallel again at convenient places; so shall both agree, and as will appear when the obstruction is removed.

But if none of these will do, run a line over by gues, and if it miss (as no wonder) take notice of your Errour at the end, by letting a perpendicular fall on the determined poynt (by means of the squair or cros) and the measure betwixt finds out the Errour: then measure the length of your intended walk or line, aforesaid; and at the quarter thereof, set off the $\frac{1}{4}$ of your Errour: At the midle the $\frac{1}{2}$ and at the $\frac{3}{4}$ of the length, set off the $\frac{3}{4}$ of your Errour; this will lead you straight upon your purpose.

Trigonometry will also solve this, if you could work exactly: for here you have two sides and one angle; see the last Chap. Sect. 9.

5. And if you have a given line and desires to set of a Parallel therefrom, but cannot measure off at both ends as is needfull, there being Trees, Waters, Hills, Walls or Houses, obstructing, you may measure, squair or Perpendicular off at any part of the given line (that is most convenient) so far as you mind to go with your parallel; at, or upon which point erect another Perpendicular to run back-

ſight and foreſight; the which ſhall be exactly parallel to the given line, as was required.

6. Having given ſome directions for ſtaking out walks for Planting, yet your Avenues and Walks muſt end in ſome figure or another, whether Triangular, Circular, Ovall, &c. For Coaches and Carts to turn in, as alſo where Walks meets, or Croſs other, its requiſite that there be ſome figure for the ſame reaſon.

How Avenues may end in Semicircles and Triangles, *ſee fig:* 2. and if it end in a Semicircle, it may begin with the ſame or rather (if the ground will ſuffer) it ſhould begin with a whole circle having fower oppoſite opens the breadth of the walk: If it end with a Triangle, it may begin ſo likwayes, but rather with a ſquair (the endings Integer) whoſe entries or *opens muſt be in its Angles.* And alſo where the Walkes meets or Croſs, I have a little figure or Open, ſee fig: 2. And yet the Trees in the whole draught every way lineal, except in the ſegment of a Circle, where they deviat a little. The figures ſhould be at leaſt three times the breadth of the walk, but ſo as the ground will admit; let not the Trees in the figure ſtand much above half the diſtance of theſe in the walke, but divide equally. make the breadth of the walk in proportion to its length: I think an Avenue a mile in length may be 40 ells in breadth, ſee Chap: 5. ſect: 2. neither ſhort Broad nor long narrow walkes are handſome, except in caſe of walkes of Shade, & alſo of Avenues where the Front of the houſe, Jammes, courts, or pavilions ar to be obſerved: for the breadth of the court ſhould be at leaſt the whole length of the Houſe-front; & if two Jammes the midle walke of the Avenue may be the breadth betwixt, and the ſide-walkes the breadth of the Jammes; or the mid walk the breadth of the whole Front, & the ſide walkes the breadth of the pavilions, which ar on the corners of the Court; or divide the Houſe Front in three, making the midle walke the juſt breadth of both the ſide ones: ſo ſhall they be every way lineall, but do not maſk a fine Front nor veyle a pleaſant proſpect. The length of the Avenue, it ſhould run ſo farr as (when we ſtand at the houſe) we may loſe ſight of the farr end, if poſſible. When it runs over a Brae, then

to

to the eye it appears *Infinitum*, and where that cannot be had, it doth very well where the ſight terminates in a grove or circle of Firrs.

7. The diſtance of Trees is ſometimes according to the quality of the ground, or Trees to be planted, ſomtimes to the number of Rowes, or as the figure to be planted will beſt admit. If a good Soyl, plant at the wider diſtance; if 4 Rowes, as an Avenue, Plant at 5. 6. 7. or 8 ells diſtance; if 2 ſingle rowes at 4. 5. or 6 ells; if circular figures or the like at 2, 3 or 4 ells, or as the figure is in ſmallneſs or greatneſs, and Plant ſo as they may ſhew the figure well.

Some Trees requires wider diſtance than others, theſe that grow greateſt, by conſequence muſt have the largeſt diſtance, ſee the next Chap: ſect: 10.

Note, that you Intermix not great Trees and ſmall Trees in Planting, neither *quick-growers* and ſlow-growers: for I obſerve a kind of Emulation amongſt them.

For Incloſures See part 2. Chap: 4.

CHAP. IIII.

How to Plant Thickets and Orchards.

AS the ground where you Plant muſt be Incloſed, ſo muſt the Trees ſtand ſome diſtance off the fence: if it be a wall whereon ar Wall-Trees, let the ſtandards be at leaſt one of their own diſtances from the ſame, & if you deſigne fine walks round by the wall, Plant the Row next thereunto with Dwarff-Trees or ſome low Hedge, and the Trees half a diſtance off ſuch; if the incloſure be a Hedge, obſerve the ſame Rule. Alſo let the Trees be Parallel to the Incloſure: but every Plot will not ſuffer to be Planted every way lineal and ſtand Parallel to the Incloſure too; therefore it will be neceſſary firſt to Inquire a little what figures they be that may

thus be Planted, (a thing I never saw Inquired) And secondly how to plant those that will not admit of this order, and lastly how to plant the several wayes.

2. The figures that may be planted every way in row ar many, yet for Brevities sake I shall mention but some as oblong, & geometrical squairs (see fig: 5. 6. 7. 8. 9.) Rhombus (see fig: 10.) Rhomboïdes (see fig. 11.) Oxigone or Equilateral Triangle (see fig: 12.) Orthygone or right Angled Triangle (see fig: 13.) Ambligone or Triangle with one obtuse and two Acute Angles, (see fig: 14.) a sort of Trapezia, (see fig: 15.) Hexagone, (see fig: 16.) Octagone (as the whole fig: 2.) these regular Polygones ar the neareſt way for Planting a Circle.

Many more figures there be both Regular and Irregular that will admit of this order, but these may suffice for Illustration. As for these that will not, you may Plant them Parallel, to as many sides as you can, and let the rest, fall as they will.

3. Now as to the several wayes so farr as I know, there is but three principal wayes of Planting, every way lineal (although there be more built thereon) *viz.* Squair, Rhombus, and Triangle: In the first, three of them makes a right Triangle, and fower of them discribes a Circle; (see Fig: 5.) In the second, three of them makes a triacute Triangle, and fower of them discribes an Elipsis (see fig: 6.) note, that this way will admit of Variation. In the third, three of them makes an equilateral Triangle, and fower of them discribes an Ovall, (See Fig: 7.) And seven of them makes a Circle with a Centre, See Fig: 17.

4. The manner of Planting the first, which is the common way is exemplified in Fig: 5. take the length of one side, and divide by the distance you mind to plant at, and the product tells how many, and whats over, if there be any, you may proportion as before. Then with your determined distance on a chain, begin at a Corner and go round the out-line exactly, where the outter row must stand, thrusting in a stake at every length; these being in straight line and at equall distances, also straight bodyed and perpendicular up. The way is thus: One must stand at W. and view to E. another at S. and

and view to N. Causing a thrid set a Stake in line with both as at L. So removing from Stake to Stake (viewing still to the opposite) direct the thrid by words or signes till his Stake be in line with both: thus proceed till all the plot be Staked out. See Fig. 5. The way the Trees will stand when Planted.

But if the ground be unevenly, cause the Stake-setter, hold up a long and straight pole (with a plumb Rule for holding it perpend:) and when he removes, to thrust a stake exactly where the pole stood: but if the pole will not do, let the viewers mount them on three footed or standing leathers; and if that will not do, betake to the Rule, mentioned in the last Chap, for taking a line over a Hill, where both ends ar confined, as I have done, in the like case.

But because some scarcely knowes signes, the Stake-setter must be told that when the viewer stands his face northwards and waves the right hand Eastward, that he must go a little east with his Pole, and when he waves the left, then westwards, when both his hands at once east or west, then he must hold the head of the Pole (if he have no plumb for his direction in this) but when the viewer moves both Hands, or Hat, up and down, then the Stake-setter must fix there.

5. If you Plant the second way in a squair, the out-line round is not equal distances thô the opposites side are, here in this example one side is about 12 and one half ells distance, and the other 15. and the viewing being Angular, and not from opposite sides makes the Trees stand about 10 and one half ells.

But if you will Plant Rombusoical, as is designed, then its don by the equal division of its fower sides, and by viewing to its opposits, as the Rombus A. B. C. D. Within Fig: 6. Doth represent; for though its Angles be not squair nor equal, yet its sides must be equal, and Angles opposite: and here it may be varyed, as is said according to the shape of the ground, by streatching longer or opening it wider. A. C. is its breadth and D. B. its length. Or you may also plant by the Romboides, as I have done, D. A. E. F. & consequently many more figures may be planted thereby as well as these may be,

varyed or altered, and yet all continue in this *Cyrus* order.

6. In the 3d way take an example in Fig: 7. where the length of one side must be divided by the determined distance *viz.* the distance off the fence being substracted, the length of the side A. B. is 119 and I designe to plant at 8 and ane half ells: therefore I divide 119 by 8. 5. decimally, the product is 14 distances; then there will be 15 rowes; here one side is Staked out, whereby you may Plant the whole plot thus: take two distances on the chain, that is, hold one end exactly at A. And the other at C. Again with that measure on the Chain, hold one end at the first Stake (*viz*: A.) And the other at the second (*viz*: L.) cause a thrid take the chain by the exact midle, and (holding it stiff) thrust in a straight stake at the Angle of the Chain (*viz*: N.) so those three makes an equilateral Triangle; then remove, holding one end at the *second Stake* (*viz*: *L.*) And the other at the thrid *viz.* C. Streatch the Chain and thrust in a Stake at its Angle or midle as before. Thus you may proceed from Stake to Stake till that row be Planted: and so on from row to Row till the whole Plot be Staked out, minding to set the Stakes straight and Perpendicular, considering their thickness also; in all which if you be not very exact, ye cannot avoyd error before you come at the other side. Therefore I shall shew you another way of my own Inventing, which is more sure and exact & less paines, *viz*: Let first that one side be marked out, as before, and having set two or three Stakes of the second row, as is just now taught; then upon two, hold to the Chain, and Plant another Stake to begin a thrid row; (as at *D.*) then take the exact distance betwixt L. and D. On the Chain, and therewith Stake out the side B. R. And because there is one Odd Row, take the exact half of that distance (by doubling the Chain) & set from R. to L. then with the whole length go betwixt B. L. thrusting in a Stake at each length, and here you shall find three distances and the *half* that was set off at the Angle R. Thus two sides ar Staked out, and he that can do this, can also Stake out the other two, seeing the opposite sides are answerable: for as A. B. is to H. L. so is L. B. unto H. A.

When the plot is staked out round, let one stand at X, and view

to

to B. & another at O. and view to R. cauſe a third, ſet a ſtake in line with both, as at Q. Thus you may proceed from ſtake to ſtake, till all the plot be marked out, ſtill minding the way of your viewing.

A Plot will contain more Trees this way, than any other example. The two Plots, fig. 5. and 7. are both alike in ſhape and quantity, each containing one Acre, 2 Roods, 16 Falls, 30 Ells: and fig. 7. holds 11 Trees more than fig. 5. planted at one and the ſame diſtance.

7. A fourth way of planting, is that which I ordinarly uſe in thickets: (ſee fig. 8.) for when the Trees growes large, every other row (ſuppoſe the ſhort ones) may be taken out, that the reſt may have freedom, and ſo be benifited by Sun and Air, where one Fruit-tree will bear more than fower crouded on others, and yet continue in as good order; and in part anſwers ſome complaining while their Orchards are young, as having few Fruit, ſeeing the more Trees there be while ſuch, the more fruit to be expected, therefore when their branches begin to meet, remove them as is ſaid, lop and plant by your Hedges, I mean by the diviſors of your Corn Land, and they being now great, are able to defend themſelves. Its alſo applicable to Forreſt-trees ſeeing while they are young, they afford little Shelter, except more than ordinary thick, and yet when they grow large cannot proſper to that ſtately magnitude, unleſs the ſame cure be uſed, *viz.* the removal of each ſecond row, which may be effectually planted about the Bordures of your Corn Land, Medow and Paſture, who now needs no fence ſave a few thorns hanged about to keep the Cattle from Rubbing, which thornes they are now well able to bear, albeit ſmall Trees are not: for the winds take great hold on ſuch. Moreover in Orchards, if the ſhort Rowes be Cherries and Plumes, they not being long lived, will be paſt their beſt e'r the Aples and Pears (which may be in the long rowes) require their Room from them.

As to the methode you muſt mark out the plot round about, as in my firſt, and view from Angle to Angle of each Geometrical ſquair; but

but then the distance of the outter Row about, must be more than in the first way, otherwise the Trees will stand much nearer. As 7. is to 5. so is the distance of the outter row about to the distance of the Trees through the Plot.

Or you may plant it by viewing from opposite sides, as in my first way, only you must plant the out-line of stakes round about, at half the former distance, and let the Stake-setter pass by every other distance (except you mean to plant Goosberries, and Curran-Standards in these blanks, and then the Trees and Shrubs together makes it Intirely one with the first way,) and now the proportion is, as 7 is to 10: so is the distance of the outter row about, to the distance of the Trees; or as 10 is to 7: so the distance of the Trees to the distance of the outter row about. *Such proportion doth the* side, and diagonal of a Geometrical squair, bear the one unto the other exact enough for our purpose.

8. The fifth way, and very notable, where Orchard and Kitchen Garden are all one, or where you have Corn or Grass amongst your Trees, or Trees (whither barren or Fruit) among your Corn or Grass, (*see fig.* 9.)

If for Kitchen Garden, divide it in Ridges, making the Tables or Pathes in the midle of the widest Intervall, and then subdivide so as the Trees may fall in the midle of the Beds, or Bordures. If for Corn-land, the ridg must be between each row, plowed within fower foot on each side the rowes or ranges of Trees: which eight foot Bordures must be delved each spring; or if stiff clay, at both equinoxes, and no vegitable suffered to grow thereon. For a man or two with large and handsome hawes 10 Inches broad, will quickly go through them in Summer, and cut the weeds at their first peeping: this would certainly be a great Improvement; and whither you apply to Corn or Grass, Fruit or Forrest-trees, I would advise you to keep them thus clean of weeds, and if ever you repent it, blame me.

9. A sixt way of planting Trees is, to make all the walkes or Intervalls open from the House proportionally, so as when you stand

ſtand at the Houſe, the walkes may appear all of an equal breadth to the eye, this would ſuit well with my contrivance of the Houſe, being like the Sun ſending forth his beams.

10. The diſtance of Trees in Thickets and Orchards, is either according to the quality of the ground, Trees to be planted, or methode of planting.

If a good and deep ſoil, there Trees will live long and grow great and requires a large diſtance: Apples planted the 1ſt., 2d., and 3d., way may be from 8 to 10 ells diſtance: Pears ſo planted at 10 or 12 Ells, and of theſe planted the 4th. way may be at the leaſt diſtance mentioned, becauſe they will ſtand near the greateſt when every ſecond is removed; but if planted the 5th. way they may be from 16 to 20 Ells one way, and from 8 to 10 the other: Cherries and Plumes from 5 to 7 Ells being planted the 1ſt., 2d., 3d., or 4th. way; as for the diſtance of dwarfs and Wall-trees, ſee the next Chap. Sect. 5.

At the Pears diſtance plant Oak, Elm, Aſh, Plan, Beach, Wallnut, Cheſnut; at the Aples diſtance plant Geens, Service, Lines, Poplars; at the diſtance of Plum and Cherrie plant Maple, Hornbeam, Haſſell, Birch, Laburnum, Aſpen, Aſder, Willowes, Pin, Firr, Yew. And ſee the laſt Chap. Sect. 7. for more directions.

If the ground be level, plant ſuch Trees as grow loweſt, at the South-ſide, and ſtill higher by degrees towards the North, that the taleſt and ſtrongeſt may be on the North-ſide; ſo ſhall the Northren blaſts be guarded off, and the Sun-beames the better received in amongſt them. If the ground be not level, plant ſuch as grow low, on the higheſt ground, and the contrary. And ſet alwayes the crooked or leaning ſide, towards the Southweſt; whence comes the greateſt winds, which in few years will make them the more erect: for you may ſee that all Trees that are not well ſheltered from theſe Weſterly winds, leans or declines therefrom.

When the ground is all marked out with ſtakes, put on the roundig ſtring, and make the holes. See the laſt Chap. Sect. 7. I uſe

not to make them leſs than 6 foot Diameter for ordinary Trees, and you may ſuffer the outter row of ſtakes to ſtand, till you plant the reſt that you may view thereby.

How to order the ground, and plant, ſee the ſecond part of this Book; and for Incloſures ſee the ſame ſecond part, Chap. 4.

CHAP. V.

How to make the Kitchen Garden.

THE Kitchen-Garden is the beſt of all Gardens, but to returne. In all Gardens it is ordinary firſt to make a Bordure at the Wall. Secondly a walke. And thridly a Bordure on the other ſide thereof; here, the walke with a Bordure on each ſide of it, going round the whole plot, Parallel to the Wall: but if your ground be large enough, I bid you make a diſtance Intercept betwixt the walk and the Wall. Its alſo ordinary to divide the Garden into four plots, by two walkes croſſing from ſide to ſide: but I am not for any croſs walkes in Gardens; yet if you would have more than one, (which divides the whole into two parts) then make them all one way through the plot leading to the Houſe, and equidiſtant from the midle, ſtill making the gates, doors or entries Front the walkes.

In your Kitchen-plots, & in Nurſeries for Trees, plant no Trees through the ground: for when they grow up, they cover and choak the ground ſo, that you will be neceſſitate to ſeek for another. Therefore, make only three Bordures next and Parallel to the walkes round on each hand: plant the firſt or that next the walke on both ſides, with a holly Hedg, the ſecond with Goosberries and currans, the thrid with dwarff Trees, the ground all open and void within for Kitchen-herbes and Roots; which muſt be orderly divi-

divided into ridges; and these again divided into Beds, Furrowes, and Drills for your more orderly and convenient planting and sowing. As for the proportion note that.

2. The walkes must be in breadth according to their length *viz.* 1000 foot long, 30 foot broad, 500 foot long, 20 foot broad, 250 in length, 15 in breadth, 100 foot long, 10 foot broad.

The Bordures 6 foot broad, the Tables or Pathes betwixt the Bordures 2 foot broad, and these betwixt the level-Ridges (wherein the ground is divided) 3 foot broad, the Beds 6 foot broad with foot and half furrowes; you may make 7 of them Beds in each Ridg, and the whole length of the plot all Running from the House: but if your ground be small you may make your Bordures and Beds narrower, yet still let the whole plot, Ridges, Bordures, and Beds *be equally divided, and their* Areas or Edges three Inches higher than the furrows or pathes, and so much higher than the side of walkes, as the middle of the walk is higher than its sides, all handsomly clapt up with the Rakehead, by a line: (and the like order you may observe in your seminaries and Nurseries of Trees) then plant and sow by lines and Drills, both for beauty and conveniency.

When you would do this, divide the Bed, Bordure or Ridg at both ends into so many equal parts: (by help of the long Rule and small sticks) then streatch on the line from end to end by these sticks, and with the corner of the Rule make a marke by the line, and therein set your *Herbes and Plants*; and for setting of seeds, measure out, and streatch on the line as before, and with the setting stick make the holes by the line (not too deep) and therein put the seeds. And if you sow in drills, make a scratch or little ebb gutter with the point of the stick by the line, and therein sow. If the rowes be two foot distance, let the first be one foot within the edg; if 6 Inches sundry make them 3 Inches off the edge, and so proportionally. Note, that I have told the distances of each sort Kitchen-herbes and Fruits part 2. Chap. 6. where is intended 6 foot broad beds, but where they are less, there must be fewer rowes.

3. The Kitchen Garden may be placed, its half on each ſide the Houſe and Courts, and when you plant or ſow, place every ſpecies by themſelves (except ſuch mixture as is mentioned part 2. Chap. 1. Sect. 3.) and where you have not a whole Ridge or at leaſt a bed of a kind, you may compleat them with ſuch as are neareſt of growth and continuance: alſo plant them of long laſt, and them that muſt be yearly renewed ſeverally, each in Ridges or beds by themſelves orderly; the order is to make every ſort oppoſe it ſelf. Example if you plant a Ridge of Artichocks on the one hand, plant another at the ſame place on the other: and ſtill where you have perennialls on the one ſide, ſet the ſame ſort at the ſame place on the other; and ſo of Annualls. In ſhort, what ever you have on the one ſide, you ſhould have the ſame in every circumſtance on the other. Perennialls are ſuch plants as continues many years in the ground, Annualls are ſuch as uſually dy immediatly after once they bear ſeed, and that is uſually (thô not univerſally) the firſt or ſecond year.

4. As for phyſical plot you may have them in that ridge of the Kitchen Garden next the Bordures: and if you will to have no other pleaſure Garden, you may have Flowers there, and on the Bordures next the walkes alſo: and that ridge or Intervall betwixt the walke and Wall will be excellent for all early, rare and tender plants. You may rill your Phyſick Herbes in Tribes and Kindreds, planting every Tribe by themſelves, and you may alſo place one of each kind in the Alphabetical order.

5. How to order hedges, ſee part 2. Chap. 4. as for Walls, Brick is beſt, next is Stone and Lime; 4 Ells is low enough, 5 or 6 if you pleaſe: but if you would make the South-looking Wall ſemicircles in it, that would conduce much to the advantadge of the Fruit, as well as Hot-beds under it; The diſtance of Wall-trees will Informe you what quantity to make them, as for example 15 foot is the diſtance of Cherries and Plumes, (except ſuch as the *May*-cherrie which being Dwarfiſh requires leſs) 18 foot for Apricoks & Peaches, 20 foot for Aples, 24 for Pears. Therefore if you make

make the ſemicircumference 18 foot for Apricoks and Peaches, (you may plant two Dwarff Cherries therein) then 36 is the whole Perifery, and as 22 is to 7 : ſo is 36 the Perifery to 11½ fere the Diameter; and having the Diameter you may eaſily make any part of the Circle : and let the plain or ſtraight Wall betwixt each ſemicircle be juſt one Trees diſtance likewayes.

And alſo in ſtraight Walls divide equally, and plant non in the Corners, meaſure firſt off 6 foot on each ſide the gates or doors for Honiſuckles, Jaſmines, &c. And whatever be the diſtance of your Trees, ſet them half therefrom, as alſo from the Corners, except where you make all their heads ply one way; (as on a low Wall) ſuch may ſtand three foot off the Corners, or Honiſuckles they lean from, and a whole diſtance off theſe they lean towards. You may plant a Goosberrie and curran in the intervalls of your *Wall-trees* while young, & when the Trees approach, remove them. Let the Roots of your *Wall-trees* ſtand near a foot from the Wall with their heads inclining towards the ſame. Wall-trees in Orchards (whoſe Standards are in the Quincunx) ſhould ſtand oppoſite to the mid intervall of the Standards.

The diſtance of Dwarff Standards is 16 foot where there is but one row, and in following this Rule of the three Bordures, they will ſtand juſt 16 foot off the Hedg, obſerving to plant in the midle of the Bordures. The diſtance of Goosberries and currans 6 foot. But in all your plantings and ſowings divide the ground ſo as each kind may ſtand & grow equally.

To conclude, theſe three *Bordures* going round at each ſide of the walkes handſomly made up and planted, as aforeſaid, will ſecure the ground within from hurtful winds and colds, and make people keep the walkes (handſome pale doors being on the entries of the Hedges) ſo as they may neither wrong you nor themſelves. Alſo the Hedge, Dwarff Standards, Shrubs, and Wall-trees being all well prun'd and plyed, with the Bordures and walkes clean and orderly kept, will make it look like a Garden of pleaſure, and hide all the Ruggedneſs that happeneth in Kitchen-ground by delving, dunging, turning and overturning throughout the year.

CHAP. VI.

How to make the pleaſure-garden, &c.

PLeaſure-Gardens uſeth to be divided into walkes and plots, with a Bordure round each plot, and at the corner of each, may be a holly or ſome ſuch train'd up, ſome Pyramidal, others Spherical, the Trees and Shrubs at the Wall well plyed and prun'd, the Green thereon cut in ſeveral Figures, the walkes layed with Gravel, and the plots within with Graſs, (in ſeveral places whereof may be Flower pots) the Bordures boxed, and planted with variety of Fine Flowers orderly Intermixt, Weeded, Mow'd, Rolled, and kept all clean and handſome.

Plain draughts ar only in uſe, and moſt preferable; that which I eſteem is plain ſtraight Bordures and Pathes running all one way, that is, from the Houſe with one walke parting it in the midle, leading to the Houſe door: and if the ground be large, you may make one round by the Wall too, as the pleaſure-Garden of fig. 1. Let the Bordures and Pathes be both of a breadth, (*viz.* 6 foot) box the Bordures, and plant them with Flowers, lay the pathes as well as the walkes with Gravel, plant the Walls with Fruit and Flower-bearing Trees variouſly.

Outter Courts hath only one Bordure at the Wall, planted with Laurels and other Greens, one Pathed or Brick-walk in the midle, leading to the midle of the Houſe-front with a long Graſs plot on each hand.

2. The Bordures of your Kitchen-Garden round by the walkes may be boxed with *Thyme*, *Lavendar*, *Hyſop*, *Rue*, &c. the next with *Parſly*, *Strawberries*, *Violets*, *July-flowers*, &c. Cherrie-gardens and Phyſick-gardens with Sweet-brier often cut, or *Box* cut three times *Per annum* as *April*, *June*, *Auguſt*, minding to cut their Roots at the inſide every ſecond year, that they exhauſt not the ſtrength or nouriſhment of the Flowers or Herbes. But that

that which I preferre for Flower-Gardens above all, is *Dwarff-Juniper* raiſed from the ſeed and Planted thus, When the ground is levelled, meaſure out the Bordures, (but raiſe them not above the walkes, except you minde to lay gravel) ſtreatch a line and with the edge of the Rule mark alongſt thereby, and therein ſet the young ſets of *Box* or the young Plants of *Juniper* at 2 years grouth; then prepare the Bordures by delving in conſum'd dung of Cowes and Sheep, covering on a little lime topt with a little ſand, to ly all ſummer, kept clean from by hawing. At the beginning of winter delve and mix together, to ly all winter un-Raked, and at the Spring redelve, ſtirr and mix it throughly, and train and plant your Flowers and other Plants in their ſeaſons. See Part 2. Chap: 7.

3. *In making the walkes in any* Gardens, firſt level up the Bordures at its ſides, ſecondly drive a Row of Stakes in the midle of the walke, and level them accordingly *i.e.* ſtreatch a line croſs the walke betwixt the two level Bordures, and marke where it hits the Stake in the midle of the walke; do this at both ends, and viewing betwixt, will levell the reſt, ſee the next Chap: of levelling. But you may mind, that the walk muſt riſe a little in the midle, and yet the midle of the walke, and top of the Boxing of the Bordure muſt be level, *i.e.* The Boxings ſo much above the ſide of the walk, as the midle of the walke is above its ſides. Where your Boxing is timber or Stone, fill up the bordure of Earth to the top thereof, but where your *Boxing is of box-juniper or the like*, the Earth within the bordure and edg of the walks and pathes without, muſt be equal.
As for the riſe or ſwell that walkes has which makes them Segmenta Circuli, graſs or brick walkes may have for 30 foot broad 6 Inches riſe, for 20 foot 4 Inches, 10 foot 2 Inches; and let gravel have an Inch more proportionally: and it agrees with the rule of proport: in Arithmetick, as 20 is to 4: ſo is 30 to 6. If gravell or brick walkes or pathes ly by the ſide of graſs, make the graſs half Inche higher than ſuch. If the walke be Graſs, make 2 foot Tables, or pathes of gravel betwixt it and the Bordure.

4. To

4. To lay graſs, firſt level the ground, whither walke or plot; and its the better to ly a year ſo made up, before you lay the turff; becauſe it may be levelled up again, if it ſink unto holes: If it ly wet, bottome with Stones and Rubiſh; and if the Earth be fat, rake it out, and put in ſand; however lay a foot thick ſand immediatly under the Truff: then by the ſquair ſtreatch lines, Ritt with the Ritting Iron (which is an half round put into the end of a crooked ſtick) & raiſe the Turff with the Turff-Spade, (which is broad mouthed, otherwiſe all one with the Husbandmens breaſt-Turffing-ſpade) let the Turff be of equal thickneſs, neat Inch and half thick, a foot and half broad, and as much in length, lay their green ſides together, when you put them in the cart, but do not Roll them when brought home, lay them all even and cloſs; Feeling each particular Turff with your foot, ſo as you may diſcern any Inequallity, to be helped Immediatly, in laying ſtill, beating every two three rowes of turff while moiſt, with the Timber beatters, and when the the whole is layed, and well beat, Roll well with the Stone-Roller, which ſhould be as big as a hogſehead, The Spring and Autumne is the beſt time. And if you mind to keep a good pile of Graſs, ſuffer it never to grow Inch long: beat, mow, and Roll often, eſpecially in the mornings and moiſt weather.

5, But if you would lay the hard tile or brick walkes, prepare as for Graſs, minding it wants the breadth of the brick of the true hight: for you muſt ſet them all on their edg cloſs by other on a bed of lime, laying the ſide, each other Row croſſing the ends of the other, and place one in the midle of the walkes that both ſides may be Regular.

6. To lay gravel, cleanſe firſt the bottomes of the walkes of fat Earth, and Root weeds, and bottom it with Stones; and lay over that about half a foot of clean round gravel, and about three Inches top gravel of equal greatneſs which may be like beans and peaſe: you muſt make it thus equal by ſifting, and ſo Rake, Tred, and beat; and when compleatly levelled, beatt well with the Timber beaters, while moiſt, then Roll ſoundly with the Timber-Roller,

and

and afterwards with the Stone-Roller, especially in Rain, for which the spring and Autumn is best; but if dry weather, you must dash water one the Roller (continually in Rolling) with the watering pott, and if you ar forced to use Sea or water sand, you may beat some good clay to dust and mix with such, before you lay it; weed, and Roll frequently.

7. For the orderly planting of flowers there may be three wayes, as first in the Bordures of pleasure Gardens or Courts, plant 5 rowes in the bordure, and Intermixe them orderly *i. e.* divide and plant every sundry sort through the whole Garden at equal distances, and not only so but every sundry colour thereof also; let never two of a kind nor two of a colour stand together, without other kinds and colours Interveening, so as there may not be two, three of a kind or Colour at one end, Bordure, Plot or Place, and non thereof through the rest, but universally and ornamentally Intermixt, and when you find a breach by some being past the flower, you may have various Annual Flowers sowen in potts, ready to plunge into the vacancies of the Bordures for continuing this beauty.

Secondly, in my sort of flower Gardens which is Bordures and pathes running all one way *viz*: from the House, Plant 5 rowes and intermix them, not as in the last way, but set 5 rowes of each kind cross the Bordure, so as 25 of each sort may stand in a Geometrical squair. As if you set a squair of Tulips, a squair of Boars-ears a squair of Crocuses, a squair of July Flowers, a squair of Anemonies, and a squair of Cowslips: and so a squair of Tulips, another of Boars Ears, &c: Through that Bordure Intermixing the Colours of each sort, then may you make the next Bordure so Intermixt, but differing: minding that as you Intermix the Bulbous and Fibrous in each Bordure, so must they be also in the crossing, that the squair of Fibrous in this may oppose the squair of Bulbous in the next, and likewayes whatever Bordure such sorts ar in, on the one side of the walke, set the very same in the Bordure equidistant from the walke on the other side, that the whole may

be Regular and uniformely Intermixt all the year, looking from all sides, ends or Angles.

Thridly in nurseries of Beds and Ridges, Plant every kind in thickets by themselves, and Annualls and perennialls by themselves (except only that you Intermix their Coloures) that is, make a whole Bed or Ridg of each kind, 6 Rowes in the Bed, the Dwarfish may be 8 Rowes: thus every thicket of them Flowering in their own order, will have a great shew, and at a great distance; and here also observe uniformity, that is, alike on each hand, see the last Chap: sect: 3. For if you have a Ridg or Bed of *July-flowers* or the like on the one side, Plant another thereof at the same place on the other, &c.

And because Flowers must be removed some in one, two, or three years, and the Earth renued or enriched, and properly prepared, else they degenerate; (because in long time they exhaust the substance of the ground, at least that part appropriate to them) therefore you have a good conveniency for effectuating the same by these last two models perscribed: for often you will have some Beds or squairs where your Annualls stood, to replant your Tulips, Anemonies or the like unto, and so another sort where these stood, and your Annualls again where this last was; and because here you remove a whole Bed or squair of a kind at once, you may very conveniently prepare, Delve, Stir, Beat, sift and mix it throughly with the soyl proper (a thing most necessary) and this you could not well do, where they ar scattred as in the first way. See the Rules mentioned Part 2. Chap. 1. Sect. 10. and Chap. 7.

As to Terrase walkes, if the Brow on which you make them, be not too steep, the work shall be the more Facile: if you build them up with walls, be careful to found deep enough according to the level, and if the midle of the terrase be on the Central line of the house or of any walke, make the Stayr of the upmost and downmost there to part at a plat on the head going down at both sides, so much of the stayr case may be within as that the outter edg thereof may be in a line with the Bordure at the wall, by this it marrs not the

walke

walke, the reſt may be at the ends; Plant the Bordure at the upperſide of the walke with wall Trees, the under ſide (being but ell high) with Laurels: &c. But if your Terraſe conſiſts only of walkes and ſloping Banks. you may have the Bordure at the head and foot of each Bank on either ſide the walkes, Planted with ſtandard cherries &c. and the Banks, of *Violets*, *Straw-Berries* or Graſs.

9. As for Pondes make them large and broad, ſuch being beſt both for the health of Fiſh and Fowll, Clean, and moſt preferrable water for watering Plants: ſquair, Triangle, Circle, Ovall, or what figure fits your ground beſt; let them be 5 or 6 foot of ſolid water at leaſt, with Sluces to let it Run in and out at pleaſure.

I am againſt Arbuſt and cloſe walkes except Trees their natural cloſing, where we have both ſhade and Air.

CHAP: 7.

How to Level Ground.

I Have often wiſhed that there might be ſome Rules found, whereby this expenſive worke might become more eaſy. There be two ſorts of levelling *viz:* the Horizontal, and Sloping. The firſt is beſt known, but the laſt more profitable and convenient. Example, I have made a plot ſlop 4 foot in 200 long, and 18 Inches in 380 foot the other way: this was not perſpicuous to vulgar eyes, yet to have made it Horizontal, would have been Ridiculous as to time, paines and expences. And in levelling the walkes about a plot (which ſloped naturally) to make them correſpond with the grownd rownd, I behoved to make the midle walk agree with the ſide ones whereupon it ſlops 10 foot in 370 long: now if I had made this Horizontal, it would have been 5 foot or 10 ſteps lower than the one ſide walke, and as much higher than the other, and ſo worſe and more Inconvenient than before, both as it is a walke,

and anent Correſpondancy with the reſt of the ground within; therefore I am for levelling any ground ſloping, that it may turn a little to the Sun if poſſible, for drawing water, that it may correſpond with its adjuncts, and above all to prevent the more coſtly way: for Its certainly a principal obſervation in levelling, not only to cauſe, the ground of it ſelf ſerve it ſelf, but alſo to level it as it lyes moſt conveniently, which is the cheap and eaſie way of levelling. When you have a Row of ſtakes ſet in a ſtraight line and about 20 foot diſtance, as in the edge of a Bordure or midle of a walke, the way of levelling them either Horizontal or ſloping, is to mark and put a nail in the two Stakes which ar at the extreams or ends thereof, and view betwixt, cauſe marke all the Reſt which ar betwixt, in a level line, therewith; This is the eaſieſt, the exacteſt and quickeſt way: and in the ſame methode you may go round any plot, and conſequently croſs (every way) the ſame accordingly.

In that which you would have Horizontal, place the long Rule and the level at one end, ſuppoſe the ſole of the Door, till the plumb fall right in recovering, and view alongſt the ſaid Rule (as on a fowlling piece) that you may ſee what part of each Stake it hits, and cauſe one with a piece white paper or white hefted knife hold the ſame at each ſtake, its heft tending out (as the nails which carry up the line) and direct him by words or ſignes to hold up or down till it be Juſt level: when they ar all marked, meaſure down ſo much on each Stake, as was raiſed up for conveniency; in viewing there marke, put in nailes a little, ſtreatch on the line, and level up the earth or gravel thereunto.

And where you would have determin'd ſlops, ſet on the level and marke the far-end ſtake in a level line therewith, then meaſure down upon the ſaid Stake or pole from the marked place ſo much as you deſigne the ſlop, and put in a naile with white paper about it, and at the upperſide of the Rule in the ſtake at the door, put in another nail, and by viewing betwixt theſe two, marke all the reſt as before. If the diſtance betwixt the extreams be farr where the ſight may dazle, let the viewer deſcent his ſtation, and come foreward at every

every 5 or 6 Stakes and holding his knife at the laſt marked Stake, cauſe his aſſiſtant or ſtake-marker proceed.

To level as the ground lyes, let its ſlop be what it will you need neither level nor Rule (except you pleaſe to try how much it ſlops after its done for ſatisfaction) only ſet ſtakes as before, and viewing the ground narrowly put nails in the ſtakes which are at the extreams where you think the ground will Run when levelled to make it ſerve it ſelf, and as it lyes beſt or eaſieſt for levelling : and when you have concluded upon the level at the extreams, make all the ſtakes in the Intervall by viewing as above.

2. But to proportion the level to the ground is the whole art of levelling. Its true it is eaſie, if you have a plot or walke a foot higher at one end, to take half a foot thereof, and lay on the low end ſo as the two ends may be Horizontal, (I have already ſhew'd how to level having the two ends found) or if it be Horizontal to take 9 Inches off the one end, and lay on the other, that it may ſlop 18 Inches : but if ſome places of it lye one way, and ſome another, and ſome neither the one nor the other, this increaſeth the difficulty. Wherefore you muſt firſt drive ſtakes at the corners of the plot, then view the ground about and put nayles in the ſtakes where you would have the level Run, or at leaſt where you think by your eye it may moſt conveniently come to make it contain it ſelf, and eaſieſt to be levelled : alſo ſet up ſeveral ſtakes in the Intervalls and Croſs-wayes through the plot from oppoſite Angles, and by viewing betwixt the foreſaid nailes every way marke all the ſtakes level; but if you cannot ſee from the markes of this ſuppoſed level which are on theſe corner ſtakes, ſeeing there may be ſome underneath the ground, little Hills, or ſome ſuch obſtructions in the way, then meaſure equally up upon each of them, ſo farr as you think convenient for getting your ſight, and mind to take down the ſame again after viewing.

When all is marked with this ſuppoſed level, go over and note narrowly how it will agree, that ſo as your reaſon ſhall teach you to alter, take up one end or down the other, or up or down both till

you bring it to such proportion, as to do its own business it self. Or you may do more exactly thus.

Suppose you have a Bordure or midle of a walke with sixteen stakes driven therein at 20 foot distance, all marked with a supposed level, and 10 of their markes above ground, and 6 under ground: first measure how farr the markes on each of the 10 stakes is above ground, and write them down particularly, and adding their measures together, you find 13 foot 4 Inches. Secondly measure how farr the markes of the 6 stakes ar under ground, & write down, adding them together you find it 12 foot; substract the one from the other and the difference is 16 Inches which must be divided by 16 the stakes in the Bordure, that is, ane Inch to each stake, so that this supposed level is an Inch higher over all than the true level, which being taken down will make the ground there level it self, and no more. This may suffice for example, but I could say more, if I did see your ground. And if you can thus proportion the level to one Bordure, walke, or one Row of stakes, you may by the same Rule find the level for the stakes round aud cross the plot, and consequently level the same accordingly: for having once concluded on the level, drive stakes over all the plot as in my first way of planting Trees, (see Chap. 4. Sect. 4.) and marke and put nailes therein as above is taught for carrying the line. Except you mean to follow my method of levelling the Kitchen-Garden, or the like for planting and sowing, which is only to level one Bordure thus by stakes and lines. Round each plot and by the eye level up the ground within thereunto all along in Trenching, albeit this not so proper for Courts and Grass plots. However as by this means, I use to level ground without a level, so do I think this way of finding out the true level by means of a supposed one, worthy your notice, and if rightly improven save you much money and paines.

Be cautious in founding your Walls lest you undermine them in levelling, nor is it convenient sometimes to confine your level to the foundation of Walls already built: for in so doing, you may lose more, than would cast down and rebuild, but in such cases you may rather build under gradually. 3. There

3. There be some bad lying plots and walkes, with an ascent at the head, hollow in the midle, level at the foot, these and the like are very troublesome to level under one denomination: for the taking down the Hill, bares it so, that plants cannot prosper thereon. some ar necessitate to take out the Gravel, Tile, or Stones so much deeper, and travell earth again: but I rather advise to make terrases, you need not confine to the number of banks, but only to the proportion and uniformity. If it tend all one way as high at one end and low at the other, then its proper enough for perpendicular walkes that front the house, but if low in the midle and high at both ends, or low at both ends and high in the midle, then more proper for Parallel walkes, (whose extremities are equidistant from the central line of the House) remember to divide and slop them equally.

This minds me of some abuses, which I have seen, as a plot of sloping levelled ground, with another Horizontaly levelled lying at the foot thereof, (at least not under one slop) or Horizontal walkes and bordures lying by the foot and head of sloping plots; these are unseemly: for you should allwayes make them slop under the same denomination (except in steep and high banks) I have made walkes of 18 foot broad slop 18 Inches from one side to the other, becaus the whole plot sloped the same way, so much proportionally, yet to the eye appears very pleasant; but where such Horizontal and sloping pieces ly contiguous, the defect is easily seen, therefore if you be necessitate to lay some plots so, (albeit I know reason for laying walkes so) make rather a Hedg to Intercept, and in all your workes let there be a connexion.

4. There be some more obttructions in levelling, as in a long walke when you have the two ends found and marked, (either with a *suppos*ed or true level) and cannot see betwixt, to do it exactly by reason of length: here two may go to the midle or near it, where you may conveniently see both ends, looking back and fore, there drive in two stakes near the length of the long straight Rules distance, at which hold on the Rule, and let one view alongst the same till the marke at the West-end be level therewith, and the other

other towards the East till the marke there be also level with the same; so both may alter up or down till they have their desires at once: then fix the Rule, and having as many stakes set as is needfull, you may view backsight and foresight hereon, and level them all exactly.

5. But if a Wall, a House, &c. Intercept, measure perpendicular and exactly up to the top thereof, and on the other side measure down the same again; and so set foreward the level, but so as it may communicate with the rest, *when obstructions are removed.*

But if a Hill, go to the Top, set the Rule level, and laying ane eye thereto, cause one with a long pole go down till its Top be level therewith (he holding it level by a Plumb Rule) then descent your stations and set the upper-end of the Rule where the pole stood, there level it and do as before: *thus from station to station to the* foot of the Hill, (if it be so great) keeping compt in a Note-book what poles and parts; the which may be as easily taken down the other side by the same method.

But if it be possible to see over the obstruction on 3 footed standing leathers by help of long poles or Pikes, (as I have done in the like case) raise your level thereon, and having viewed, and marked that on the other side, measure down the same there, &c.

6. I might here speak of the solidity of earth, whereby you may move readily compt the expence of levelling, but having shew'd in the next Chap. Sect. 5. How to measure solids, I presume its applicable to earth: (as well as Timber, Stone, &c.) For if you know the breadth, length, and deepth thereof, you may find how many solid Ells, &c. And if you know how many Ells and parts will load a cart and how many carts a day, you may go near to calculat the cost of the whole.

7. In levelling any ground for Kitchen ground, Orchards, or Nurseries, take not away its good earth or surface, (as you bring down the hights) but alwayes turn over the upper-part thereof behind you, carrying away that which is below, so much deeper, that it may contain that surface, and put the bad earth in bottom of hollowes with better mould above it.

In

In the practiſe of levelling (or other workes) contrive the working, ſo as there may be ſtill a motion amongſt all the partes; and albeit carts are cheaper for levelling than Wheell-barrowes, if the way of carriage be not very ſhort, yet if you do not ſet as many men to fill the carts as may have the one full againſt the other come in and no more, you loſe conſiderably: and this will be according to the diſtance of carriage, or as the earth is capable of being wrought; and ſo with Wheell-barrowes for two Wheellers, three barrowes, and one filler ſometimes doth well, ſometimes more fillers or fewer Wheellers, yet ſtill let them have a led barrow. And if this could be done with carts alſo, it would be of great Advantage. wherefore in my opinion there is no way ſo probable to worke this effect, as the carts with three Wheells where by 2. men, with 2. of them carts, and one Horſe can do as much as three Men, two Horſes, and 2 Carts: for one man to fill the led Cart, the other Man to drive the one Horſe: and when he comes in, he has nothing to do but take the Traſes and Hooks off the empty Cart and put upon the rings of the full one and ſo drive on. This Cart has no Trams or Limbers, but a Swingle-Tree or Breaſt-board before, where the rings that keeps the Traſſes are: it has a handſome folding body, the thrid Wheell is about 30 Inches Diameter all Iron and Runs in a Shiers of the ſame faſtned perpendicular under the midle of the forebreaſt with a turning Pin of Iron; the other two Wheells are common, but if they have an Iron Axis, the better.

8. To bring in Water in Pipes to your Houſes, Courts, Gardens, Pondes, Parks, &c. Conſider on the level, for as the place where you convey it unto, muſt allwayes be lower than the Fountain from whence it comes, elſe thither it cannot flow: ſo muſt you take notice that no Hill in the way of its conveyance be ſo high as the Fountain it ſelf. You may find the level by placing your Inſtrument at the Well or Fountain, as I directed in walkes. and if a Hill intercept that ſight, plant on the Top thereof, that by backſight and foreſight you may find the difference, that hence you may know whither you can carry it about the obſtruction: but if

the distance be farr, you need to be the more exact. As for Instrument, the Crosse discribed Chap. 3. whose sights may be two Prospect Glasses, may do well whither for one or many stations. Let one stand at the Spring-head, another betwixt and the place whereunto you desire to carry the Water, a large distance sundry, but so as a thrid man about the midle may see both their Marke-boards that is on their Pikstaves, and direct them to hold level by his back and foresight, desiring them to keep accompt what foot and parts: and so come foreward till the assistant at the well plant where the foremost stood, and thus proceed all in a straight line, and do as before, from station to station so long as needfull. at length add all the measures of back-stations together, and all of the fore-stations: substract the one from the other, and the remainders gives the difference of levels betwixt the Fountain and the appointed place.

Allow to the fall of the Water for every 1000 foot in length 12 Inches slop at least.

CHAP. VIII.

How to measure, divide and lay out Land, &c.

SOme following other-Countrey-books Ignorantly measures our ground with their measures, therefore I am here to Informe such that,

In measuring all figures whither superficial or solide, it is requisit to know first, wherewith they should be measured, secondly how they should be measured.

Land is done by ell, or fall measure, (also Masons Roughwork-buildings) Stone, Board, and Glass by foot measure: 12 Inches a foot (and no distinction betwixt a Scots and Englisch foot) the Glaziers

ziers uſed only 8 Inches, but the Act of Parliament hath reduced them to 12 as others. Some would think 12 Inches but a thrid part more, whereas it is equivalent to $2\frac{1}{4}$ of theirs: for 8 times 8 is 64, and 12 times 12 is 144, out of which I get 2 times 64, and the 16 remaining is $\frac{1}{4}$ thereof. This minds me of that queſtion *viz.* Whither is a ſquair half foot or half a foot ſquair moſt? I have heard ſeveralls ſay they were both alike, but this was their miſtake: For a half foot ſquair (ſuperficial,) is but the half of a ſquair half foot, and if ſolid its but $\frac{1}{4}$ thereof.

The Scots Ell according to ſeveral Acts of Parliament is three foot one Inch, or 37 Inches long: 6 ells long and 6 ells broad is 36, a fall ſquair: 10 falls in length and 4 in breadth is 40, a Rood ſquair: 40 falls in length and 4 in breadth is 160, an Acre. See the Table of ſuperficial ſquair meaſure. And theſe that deſires long meaſure, 6 ells long is a fall, 40 falls a furlong, 8 furlongs a mile. See the Table.

A Table of Superficial ſquair meaſure, according to Scotland.

Acres	4	160	5760
	Roods	40	1440
		Falls	36
			Ells

A Table of Superficial long meaſure, according to Scotland.

Ells			
6	Falls		
240	40	furlongs	
1920	320	8	Mile

We differ in measuring land from the English, as the fall differs from the pole: our fall is 6 ells or $18\frac{1}{2}$ foot, their pole is $5\frac{1}{2}$ yardes or $16\frac{1}{2}$ foot.

By what is said I hope you know wherewith to measure, it only remaines then that you know how to measure; of which anon.

2. In measuring all superficies we take notice of the breadth and length, but of solides the breadth, length and deepth. To instance in a few, and first of some Superficial Figures; as a Geometrical squair, (see fig 18.) it is measured by multiplying one side in it self (*viz. a. b.* or *c. e*: or *a. c.* or *b. e.*) which here is $30\frac{1}{2}$ falls: In your workings I would advise you to make use of decimal Arithmetick, because thereby you may work whole Numbers and Fractions together with great ease and quickness, and you may reduce ordinary Fractions into decimalls, by multiplying the Numerator by 100. or 1000. &c. and dividing the product by the Denominator, so shall the $\frac{1}{4}$ of any thing be 25, the $\frac{1}{2}$ 5, and the $\frac{3}{4}$ 75: therefore multiply 30. 5 in its self, the product is 930. 25. which is 930. falls and $\frac{1}{4}$ of a fall. See the example, for when you multiply decimally what ever fractions are in multiplicand and multiplicator, cut them off after addition: the which if there be any will be Fractions, as here you see two cut off *viz.* 25 which is $\frac{1}{4}$ of 100, the fall being here into 100 parts the Integer of 25. And when you divide decimally, as whole Numbers and Fractions by whole Numbers, put still a dash betwixt the whole and Fraction, and notice how often you will get your divisor placed under the whole Numbers of your dividend, and just so many whole Numbers will be in the quotient and the rest Fractions: or if you divide whole and Fractions by whole and Fractions, notice how many times you may place the whole Numbers of divisor under whole Numbers of dividend &c. Or if you divide whole Numbers by whole and Fractions, whatever Fractions be in divisor add so many Ciphers to the dividend, and do as before.

```
 30. 5
 30. 5
------
 1525
 9150
------
930.25
```

You may reduce this (or any other) plot into Acres by dividing by

by 160 the falls in one Acre, and the product here will be 5 Acres 130 falls and $\frac{1}{4}$ of a fall. But if you would further know what this Fraction (25) is in Ells, say, if 100 be equall to 36 the ells in one fall what is 25 equall unto? Multiply the 2d Number by the 3d, and divide by the first and the answer will be 9 ells. See it wrought.

900 (9
100

36 1
25 43
180 930 (5
72 160
900

Moreover falls may be reduced into poles, and poles into falls, or Scots measure into Englisb or Englisb into Scots: one superficies is to another as the squairs of their like sides, therefore as the squair of 16.5 (the *Englisb*) is to the squair of 18.5 (the *Scots*) so is the content in *Scots* Acres or falls, to the content in *Englisb* Acres or poles.

Example the squair of 16.5 (i.e. 16.5 multiplyed in it self) is 272.25 and the squair of 18.5 is 342.25, And as 272.25 is to 342.25 : so is 930.25 (the content of the said plot in falls or *Scots* measure) to 1169.43$\frac{1}{4}$ fere, its content in poles or *Englisb* measure. This I thought fit to mention, to let any see that knows not the difference betwixt the *Englisb* measure and ours.

Secondly an oblong squair or Parallelogram (see fig. 19.) by multiplying the breadth by the length: *a.d.* or *b.c.* is its length and *a.b.* or *d.c.* its breadth.

Thridly, a Triangle, (see fig. 20.) all Triangles are measured by multiplying the whole base by half the perpendicular or whole perpend: by half the base; *a.b.* is base and *i.c.* the perpendicular, or without the perpendicular at all, add up all the sides, and take half the summe; from this half summe take every side, which call the three differences, multiply these three differences and the half summe continually together, the squair Root of the last product shall be the Area of the Triangle.

Fourthly, a Trapezia (see fig. 21.) is reduced into two Triangles, and measured accordingly.

Fifthly, and so is any irregular straight lined figure, and if any side of it be crooked, draw a line that may leave out as much as it takes in. But if it cannot be measured within because of obstructions,

then add on the outside till you reduce it into a squair, and after multiplication substract what was added, the remainder shall be its Area.

Sixthly a circle (See Fig: 22.) is near equall to a squair made of $\frac{1}{2}$ the diameter and $\frac{1}{2}$ the circumference or perifery, and therefore is measured by multiplying *a. q. c. o. b.* the Semicircumference by *a. d.* or *d. c.* the semidiameter. And having any one given you may find the other by the Rule of proportion thus:

The lowest number is, as 7. is to 22: so is the diameter to the Circumference, or as 22. is to 7: so the Circumference to the diameter, or thus: As 1. is to 3. 1416: so the Diameter to the Circum: or as 3. 1416. is to 1: so the Circum: to the diam: or as 113. to 355: so diam: to perifery, or as 355. to 113: so perifery to diameter.

In this the Diameter is 63 falls and as 7. is to 22: so 63 (the diam:) to 198 (the perifery) Take $\frac{1}{2}$ perifery which is 99. and multiply by $\frac{1}{2}$: Diameter which is 31. 5. and the product is 3118. 5. or as 28. is to 22: or 14. to 11: or 1. to 785399: so is the squair of the Diameter to the Area of the circle: or as 22. to 28: or 11. to 14: or 355. to 452: or 1. to 1. 273239: so is the Area of the Circle to the squair of its diameter. as 1. is to 282095: so is the circle to the Root of a squair equall to the Area of the circle. as 1. is to 707107: so is the Diameter to the Root of a squair to be inscribed in a Circle. as 1. is to 225072: so is the perifery to the Root of the inscribed squair in the circle, and as 1. is to 886227: so is the Diameter to the Root of a squair equall to the Circle, which is the squairing of a Circle.

Seventhly, the Semicircle is measured by multiplying the Radius or semidiameter by $\frac{1}{4}$ of the circumference of the whole Circle.

Eightly, the Quadrant or $\frac{1}{4}$ of the Circle, by multiplying the Radius by $\frac{1}{2}$ of that Arch line which is $\frac{1}{8}$ of the perifery.

Ninthly, to measure the segment of a Circle as *q. i. o. c.* first draw its Radius from *d.* to *o.* which constituts the Sector *d. o. c.* And as the Quadrant hath 90 degrees so this Sector hath 40: therefore say,

as

as 90. is to the content of the Quadrant: so is 40. to the content of the sector, the Triangle *d. o. i.* Being substracted from the Sectors content, Rests half the segment, that doubled is the Area of the whole.

To do Geometrically, find the length of its Arch line thus: (See Fg. 23.) divide the chord line *a. d. e.* Of that arch into 4 equall parts set one of these from *c.* to *i.* on the chord line, and one of them from the Angle at *a.* to. *o.* In the Arch line, then draw the line *o. i.* which line is half the length of the Arch line, *a. o. b. c.* (but if the part of a Circle be greater than a semicircle, then divide the Arch line into two equall parts and find the length of one of these as is taught, which doubled is the half length of the whole.) here take the half of the Arch line of Fig: 23. And multiply by its Radius *e. b.* The product is the Area of the segment *a. b. c. d.* and the Triangle *a. c. e.* which Triangle must be substracted therefrom, and the remainder is the Area of the segment.

Tenthly, if you would measure the oval, then obserue the Rules in measuring the segment: seing the oval is made of segments; If it be from two Centers, then its but two Segments, If from four, then it is four segments and a quadrangle.

Eleventhly Regular poligons ar such figures as consist of equall sides and Angles, and which may be inscribed in a Circle or Circumscribed about a Circle, whither pentagon 5 sided, hexagon six sided, Heptagon, Octagon, Nonagon, Decagon, Dodecagon, for any of these take half the compass about and the perpend: drawen from the Centre to the midle of one of the sides, multiply the one by the other, and that gives the content.

Twelvthly to measure any Irregular figure consisting of straight and Circular lines, the arches and angles bending Inwards; If you cannot reduce them into some of the Figures above mentioned within it self, you may do it by drawing lines without: and after you have multiplied, substract what was added (whither segments or others) and there will remain the Area of the figure proposed.

Mountains and Valleyes ar best reduced into Triangles, and so mea-

measured: for albeit they make rather spherical than plain Triangles, yet the way of mensuration differs not; yet as in plain Trapezias there are other wayes than by Triangles (as taking the half of both ends and sides added for the mean breadth and length) so for mounts and Valleyes, *viz*: Measure the circuite or base part of the Mountain and its top, add them together, and take half of that sum for the length; do so with the ascense (or going up from foot to top) of 2 sides of the Hill, add the measure of the longest and shortest side together, taking the half thereof for the breadth, and multiply the one by the other, that gives the superficies of the Mount or Hill.

And as you measured the compass of the foot of the Hill so must you round the circuite or compass of the hight of the valley or glen: and as you measured the top of the Mountain, so must you the bottom of the depth of the valey; add them together and take half thereof for the breadth. likwayes as you measured the ascense of both sides of the Hill, so must you the descense or going down of both sides to the bottom of the valley; add them together, and take half for the length, and so multiply as before.

3. Albeit I have said enough anent measuring land, yet there is much more required in dividing and laying out the same.

The first time I saw the need of it, was in making an Avenue of great length which crossed a march several times, which did take in several pieces of land and cast out others, but non of them being equal neither in shape nor proportion, I behoved to measure both, and then cut off so much as might Ballance, and that from parts assigned.

As first, if from the Triangle *a. b. c.* (being Fig: 24.) which containes 870 falls squair, you would cut off 300 falls squair, then finding the base *c. b.* of this Triangle to be 58 falls long, say, if 870 falls (the whole plot) have 58 for its base: what will 300 (the part I desire off) have for its base.

Answer

Answer, 20. therefore measure alongst 20 falls on the base from one end thereof, as from *b.* to *d.* then draw the line *a.d.* so shall *a.b.d.* contain 300 falls, and *a. d.c.* 570. Or

		300
1		58
17400	(20	2400
8770		1500
8		17400

If it be required to take off part from a Triangle, according to any proportion given, by a line drawen parallel to any of the sides assigned, as let *a b.c.* (which is Fig. 25.) be a Triangle containing 7 Acres, or 1120 falls; and it is desired that 2 Acres be cut off by a line drawen Parallel to *a. c.* Its base line is 57 falls which you must divide in proportion, as 5. is to 2. in the point *d.* then seek the mean proportional between *b.d.* 42. and *b.c.* 57. as *b.f.* 48 $\frac{80}{97}$ But having (*as in the end of this Chap:*) shewed how to find mean proportionals Arithmetically, I shall here shew you how to do Geometrically.

Therefore describe the semicircle *b.e. c.* and at the point *d.* on the base line, raise the Perpendicular *d e.* Cutting the Arch line in *e.* then set the length of *b.e.* (which is the mean Proportional) from *b.* on the Diameter line, and that will reach to the point *f.* now from the point at *f.* take the neareſt distance to the line *c.a.* and set that distance squair off at *a.* to *G.* then draw the line *G.f.* exactly parallel to *a. c.* so will the Triangle *G.b.f.* be 5 Acres, and *G.f.c.a.* 2 Acres, the thing propounded.

If you would cut off some part from a squair parallel to one side, you need only measure that side, whence you designe to take it at; and divide the parts, you ar to take off thereby: and the quotient shall tell how much you must set off. Example by fig: 19. its ane oblong squair denominated *a.b.c.d.* I desire 3 Acres or 480 falls, cut off at, and parallel to the side *a.b.* which side is 32 falls. divide 480 (the part you ar to cut off) by 32 (the side of the squair) and the quotient will be 15 therefore set off 15 falls from *a.* to *e.* and from *b.* to *f.* and the squair *a.b.f.e.* is 3 Acres, as was required.

But if its sides did not go squair off, as the Trapezia 21. then reduce the Trapezia into a Triangle, and divide the base into so many

equal or unequal parts, (as you would have the Trapezia into) then find a mean proportion between the extream points of the base, and every particular point in the base: from which means draw lines through the Trapezia parallel to the side assigned, which may answere your requiring. Or

A more ready way to work on ground, is to find the mid line of the ground you are to cut off, and divide thereby, &c. But the question, is how to effect this, you may first set off the whole in two Triangles, *viz:* If you would cut off 160 falls, at the end *a. b.* of fig: 21. Then set off the half thereof at the Angle *c. a. b.* to cut the line *a. c.* by the first: for you will find that as the Triangle *c. a. b.* containes 364 falls, so must you go $7\frac{2}{3}$ from *a.* to *e.* on that base, to draw the line *b. e.* that Cuts off the Triangle *a. b. e.* containing 80 falls. Likwayes as the Triangle *d. e. b.* containes $165\frac{1}{2}$, so must you go from *b.* to *f.* that, *a. b. e. f.* may containe 160 falls. Only the line *e. f.* is not parallel to *a. b.* therefore as *b. f.* is 5 longer than *a. e.* set $2\frac{1}{2}$ out from *e.* to *G.* and in from *f.* to *h.* and draw the line *G. h.* parallel to *a. b.* and to leave as much out as it takes in; then find the length of the mid line betwixt *a. b* and *G. h.* *viz. i. k.* which is 16. and by the same divide 160. the quotient shall be 10. And that will reach from *a.* to *G.* and from *b.* to *h.* so as to cut off 160 falls at, and parallel to the end *a. b.* (by the line *G. h.*) as was desired.

It is required to part the pentagon or fig: 26. Into two equal parts from the Angle at *a.* The whole figure is 10 Acers, one Rood and 12 falls, that is, 1652 falls; then the half is 826. and the Triangle *a. b. c.* is but 441. which wants 385 of the half: therefore take 385 from the Triangle *a. c. d.* by the first Rule, and there will be added the Triangle *a. c. f.* to the Triangle *a. b. c.* which will divide the figure into two equal parts, the thing required.

I am desired to set off a thrid part of the hexagon or fig: 27. By a line drawen from the point *G.* the whole plot is 45 Acers and 145 falls or 7345 falls, the $\frac{1}{3}$ thereof is 2448. and the Trapezia *G. e. f. a.* is but 2041. 875. which wants 407 falls: (and the fraction which is a little more than $\frac{5}{6}$ of a fall) wherefore I must take 407. 875 from the

Trian-

t
he Triangle *G. d. e.* by the first, thus. If 2523. 50 the content of the Triangle *G. d. e.* have for its base *c. d.* 62 falls, how farr must I go on the same to get off 407. 875? answer, 10 $\frac{5325}{25235}$ that is 10 falls and about $\frac{1}{5}$ of a fall; the which being set from *e.* to *h.* to draw the line *G. h* parts off the $\frac{1}{3}$ of this Irregular hexagon, as was desired.

If you were desired to lay out any number of Acres at pleasure into a Geometrical squair, you need only reduce them into falls and extract the squair Root thereof (as at the end of this Chap.) which is the length of one side, and so measure, or set off by a Chain. Or

If you would have it ly in a Parallelogram or oblong squair, you may lay it out, as I directed for cutting off some part from a squair parallel to one side: for knowing how many falls you would have into the oblong squair, you may make a side at pleasure (if not already confin'd to one) and divide thereby as is taught. Or

If you would make a Triangle to contain so many Acres, Roods, or falls, double the number of falls, then take for the base of your Triangle, any number at pleasure, by which divide the double of falls to be brought in the Triangle; and the quotient shall be the perpendicular to that Triangle, whose content shall be the number of falls proposed. And herein consists the Reduction of figures Arithmetical.

4. Perhaps you may have occasion, to measure the solidity of Earth, Timber Trees, Stones, *&c.* Now to find the superficies of solides. as,

First the Sphære or Globe. multiply its whole circumference by its whole diameter, and that gives its superficial content. And as 7 is to 22: or 113. to 355: so is the Diameters squair to the superficies of the sphære: and so is the Diameter multiplyed by the axis of a cylinder to its superficies: and so is half Diameter of a cone multiplyed in its side to the superficies of a cone: and so the squair of the chord of half the segment of a sphere to the superficies of that segment.

As 1. is to 1. 772454: so is the Diameter to the Root of a squair equal to the superficies of a Sphære. Or as 1. is to; 564189: so is

the Circumference to the Rootſquair, that ſhall be equal to the ſuperficies of the Sphere.

5. As ſuperficial meaſure hath 144 Inches ſquair in one foot: ſo ſolide meaſure hath 1728. every ſolide foot is like a Die, for what it wants either in breadth or thickneis it muſt have in *length*: for 12 times 12. is 144, and 12 times 144. is 1728. the cubeſquair Inches in a cubeſquair foot; therefore,

In meaſuring a ſquair ſolide, multiply its length by its breadth, and that product by its deepth.

To meaſure a Cylinder (ſuch as a Roller) multiply the Semidiameter by the Semi-circumference, and that product by the length.

To meaſure a Cone (*viz.* it hath a Circular baſe, and ends in a ſharp point) take the ſuperficial content of the baſe, and multiply by $\frac{1}{3}$ of the altitude or hight.

To meaſure a Pyramid (*viz.* it hath an angular baſe, and ends in a ſharp point) make uſe of the laſt Rule.

To meaſure a Sphere or Globe, (*viz.* a ſolid figure every where equidiſtant from the Centre) Cub the Diameter, and multiply that by 11. then divide that product by 21. the quotient is the ſolide content of the Sphere.

As 1. is to 80604: ſo is the Diameter to the Root of a Cube equal to the Sphere. Or as 1. is to ;256556: ſo is the Circumference to the Root Cube of a ſolide, equal to the Sphere.

As 1. is to 523599: ſo the Cube of the Diameter to the Sphere. Or as 1. is to ;909856: ſo is the Sphere to the Cube of the Diameter.

As 1. is to ;016887: ſo is the Cube of the Circumference to the Sphere. or as 1. is to 59;217629: ſo is the Sphere to the Cube of the Circumference.

As 42. is to 22: or 1. to 5236: ſo is the Diameter cubed to the ſolidity of the Sphere. Or as 22. is to 42: or 1. to 1;90986: ſo is the ſolidity of the Sphere to its Diameter cubed.

As 28. is to 22: or 14. to 11: or 1. to 785399: ſo is the ſquair

of

of the Diameter of a Cylinder multiplyed by its side, to the solidity of the Cylinder: and so is the squair of the Diameter of a Cone multiplyed by $\frac{1}{3}$ of its Axis, to the solidity of the Cone.

As 1. is to 25;1327: so is the Diameter cubed to a Cylinder.

To measure a Regular Polygon, (as a piece Timber hewed into 5, 6, 7, 8, &c. Equal sides with both ends alike) multiply the semi-circumference by the Radius or semi-diameter, and that product by the length.

To measure a Truncus, (*viz.* a Cylinder that leans) take the superficies of the Circle, and adding the longer and shorter sides of the Truncus, take the half for the hight.

The Sector of a Sphere is measured by multiplying its superficies Spherical by one third of the hight.

The Segment of a Sphere measure it as a Sector, and substract from the Sector the solidity of a Cone, whose Apex is in the Center, and base the Area of the Segment.

The solidity of a Spheroid is got by multiplying the greatest Circle into two thirds of the Axis about which the Spheroid is made.

The solidity of the Trunk of a Spheroid cut off with two Circles at right angles with the base, such as our Wine Caskes are, is gotten by adding two thirds of the Area of the Circle at the bung or midle together, and multiplying the same by the length.

Irregular disorderly Solids ar measured by help of Water in a prepared Vessel exactly cubical, so large as it may contain it; according to *Archimedes*: put the body into the vessel, pour in so much Water as may just cover the same; and make a marke where the superficies of the Water touched the vessel; take out the same irregular body, and make a second marke where the superficies cuts the side of the vessel; then take the distance between the two markes in Inches and parts, which multiply by the squair of the side of the prepared vessel; and that product shall be the solidity of the irregular body sought.

6. If you would measure any superficies by the Table of Logarithms, then set down the Logar: of the length and breadth, add

them together, and whatever their ſumme be, the number anſwering thereunto is the Area or ſuperficial content. Which if they be falls and you deſire to reduce them into Acres, then out of the Logarithm thereof ſubſtract the Logarithm of 160 (the falls in one Acre) and there ſhall remain the Logarithm of the content *in* Acres. Or

If you would meaſure ſolides by the Table, ſet down the Logarithms of its length, breadth, and deepth: add them together; and the abſolute Number anſwering this Logarithm is the ſolide content required.

Alſo by the Table you may extract the ſquair Root (of any plot, field or other ſuperficies) with great eaſe and quickneſs thus:

Take the half of the Logarithm of the given Number whoſe Root is required, and the Number anſwering this Logarithm is the ſquair Root ſought. Or

For extraction of the Cube Root of any ſolide, take the third part of the Logarithm of the given Number whoſe Root is required, and the abſolute Number anſwering thereunto is the Cube Root deſired.

And to find a mean proportional (between two Numbers given by the Table) is to add the Logarithms of them together, and take half. As if you would have the mean betwixt 40. 5. and 72. Thus:

The Logarithm of 40. 5 is	1. 607422
The Logarithm of 72 is	1. 857290
The ſummes added	3. 464712
The half of the Logarithm is	1. 732356

The Number anſwering this Logarithm is 54. for the mean proportional.

To find 2, 3, 4, 5, &c. means between any two Numbers, take their difference, and divide it by a Number more by one than the Number of means deſired, as if 3 means, divide by 4. &c. This Logarithmical quotient added to the laſt, finds the firſt mean next it,

it, &c. As, if you would have three mean proportionalls betwixt 4. and 64.

The Logarithm of 64. is . . .	1.806180
The Logarithm of 4. is . . .	0.602060
The difference is	1.204120

The $\frac{1}{4}$ thereof is 0. 301030. which being added to the Logarithm of 4 makes 0. 903090. the Logarithm of 8. for the first mean: again added to this last, gives 1. 204120. the Logarithm of 16. and added to this, gives 1. 505150 the Logarithm of 32. which 8. 16. 32. ar the 3 means betwixt 4 and 64.

But becaufe the extraction of the fquair Root is fo needful to be *known, I fhall demonftrate the fame.*

Example, If you were to find the fquair Root of 576. Suppofing it the fquair of Fig. 18. Make firft a dafh at every other Figure, beginning allwayes at the firft towards the right hand *viz.* at 6. and 5. that juft fo many Figures will be in the quotient or Root; then fay, what is the Root of 5. anfwer, 2. is the neareft, therefore write 2 in the quotient and multiply the fame, faying 2 times 2 is 4. write down that under the 5 and fubftract it therefrom, faying, 4 from 5 there remains 1. thus have you 20 the fquair Root of G. *i. c. f.* (confidering that there is yet one Figure to follow) and now you want the fquair Root of the two oblong fquairs, *viz. a. b.* G. *b.* and *e. b. f. d.* (out of which you muft fubftract the little fquair *e. b. i. h.*) therefore double your quotient or Root of the fquair G. *i. c. f.* faying 2 times 2 is 4 write this down for your divifor one Figure foreward *viz.* under 17. and ufe common divifion, fayinghow often can we get 4 out of 17. anfwer, 4 times, write that in the quotient and fay, 4 times 4 is 16. that fubftracted from 17. remains 1. thus have you 4 the Root of the oblong fquair, out of which fubftract the little fquair once, becaufe you have it twice by the former doubling the oblong fquair; therefore multiply the fide of the little fquair, *viz* 4 in it felf, that makes 16. fubftract the fame from 16

11
576(24
446
1

and

and there remains nothing: so 24 is the squair Root or side *a. b.* whose squair is 576.

Example 2. If the squair of this plot be 543169. make the dashes, as before, *viz.* under 9.1.4. and say, what is the squair of 54. (the dashes so directs, and not to 5. therefore mind the usefullness of them) now the neareſt squair Root of 54 is 7. But as in division, so you must look, if you will get the double thereof out of the remainders and the little squair too: If you mind this you cannot go wrong. But upon tryall I find it will so work, therefore set 7 in the quotient and multiply the same, it makes 49 write that down under 54. substract, and there remains 5. This tells that the Root of the large squair is 700. (considering that there is yet 2 Figures to follow as appears by the 3 dashes) now double your quotient, that makes 14 (this is the length of the two oblong squairs) place the same, as in division, and say, how often can we get 14 out of 53. answer 3 times and, 11 remaining; now substract the little squair whose side is 3. Thus, 3 times 3 is 9. from 111. remaines 102. There is the Root of other two oblong squairs wanting: therefore double the whole quotient *a. b.* 73 that makes 146 place the same as before, for division, and say, how often can we get 146 out of 1026, or gradually, how often one in 10. we get 9 ones in 10, but not 9 fowers in 12 which will remain. then try if we can have 8. No, therefore take 7 and set in the quotient, as before in common division, *viz.* 7 times one from 10. remains 3. and 7. fowers from 23. remains 4. and 7 sixes from 46. remains 4. lastly substract the little squair, *viz.* 7 times 7 from 49. there remains nothing. So the squair Root of 543169. is 737.

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 13
204
15124
543169 (737
494969
 1144
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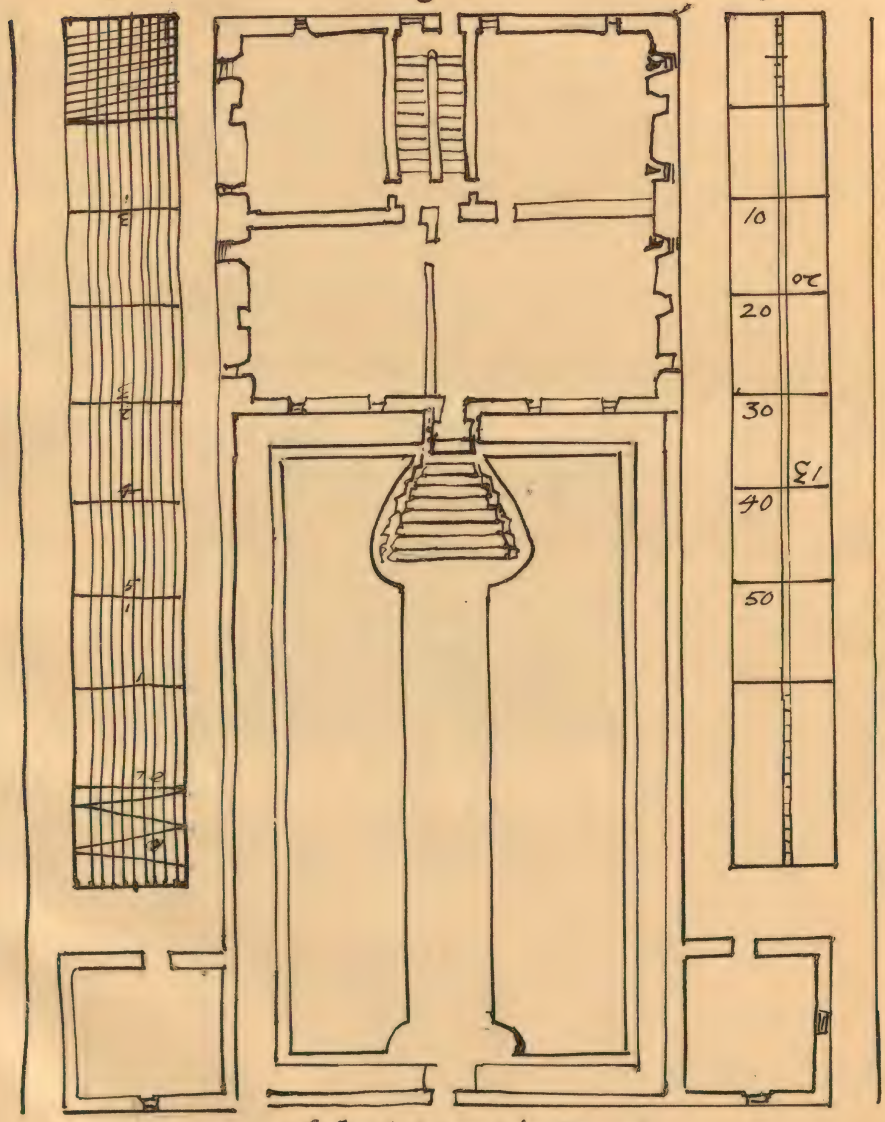
And if the Number be never so great, you may observe that the first operation consists of 3 parts. (*i e.* first, finding the Root of the great squair; secondly, the Root of the oblongs by doubling the quotient and using common division; Thirdly, substracting the little squair for the reasons above demonstrated.) The second operation (if there be more than one as in this last example) consists of

2 parts

Fig 3

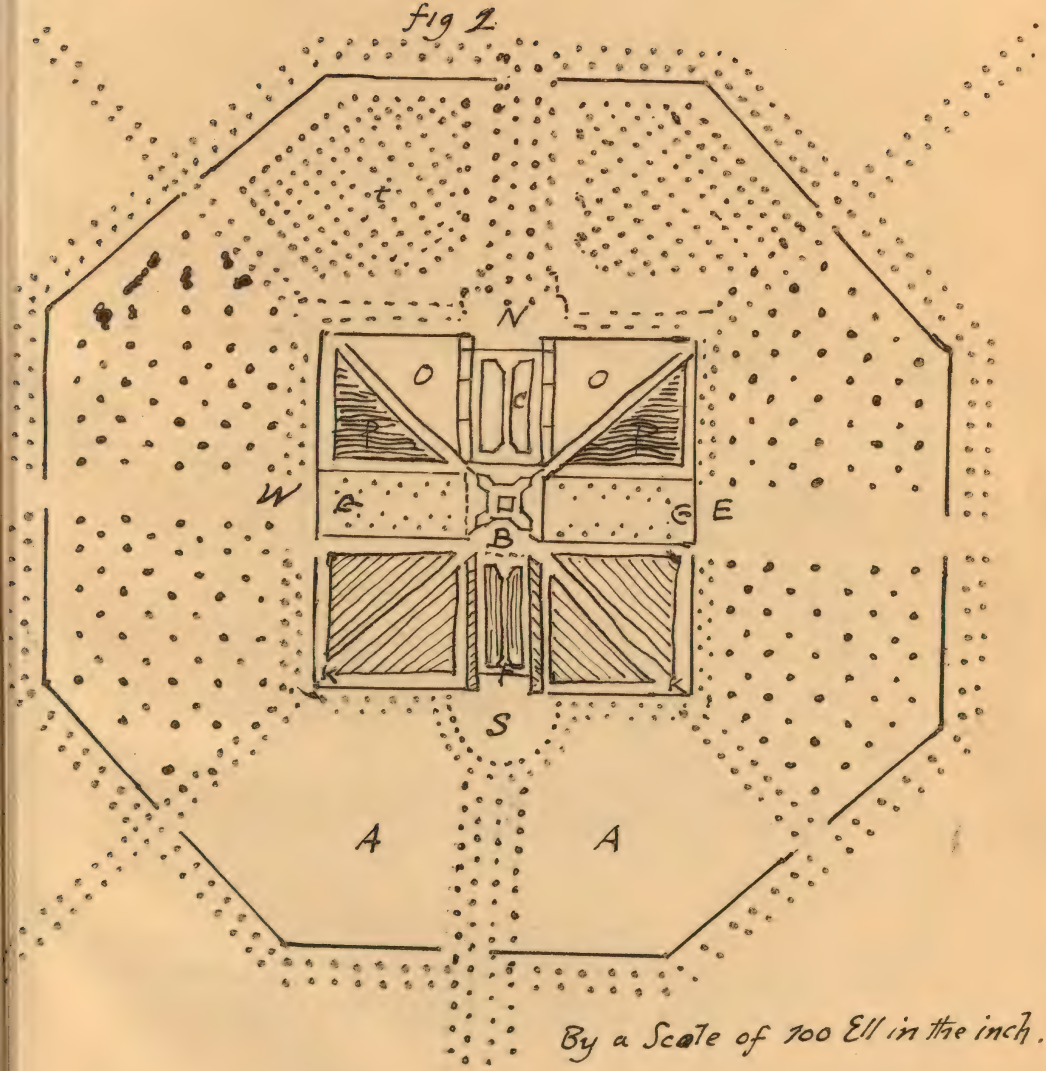
Fig 2

Fig 4



a Scale of 20 feet in the inch.

fig 2.



By a Scale of 100 Ell in the inch.

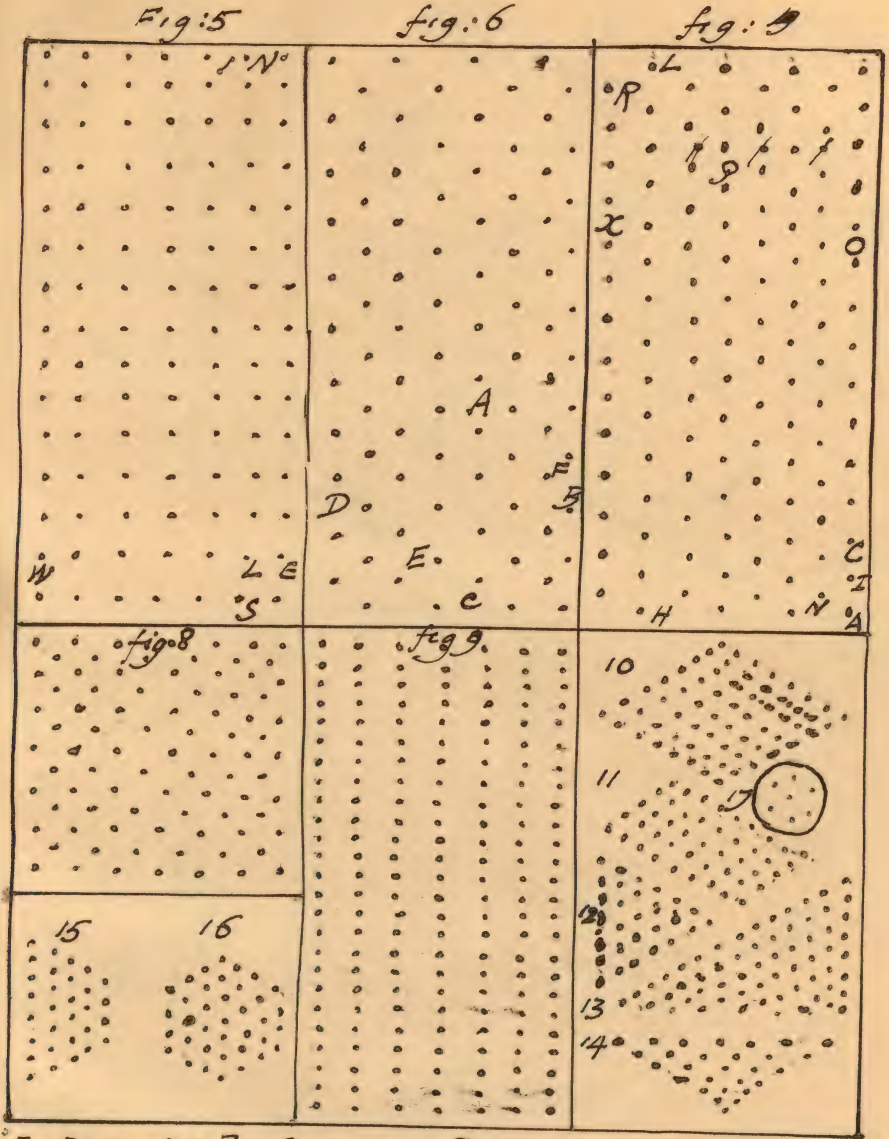
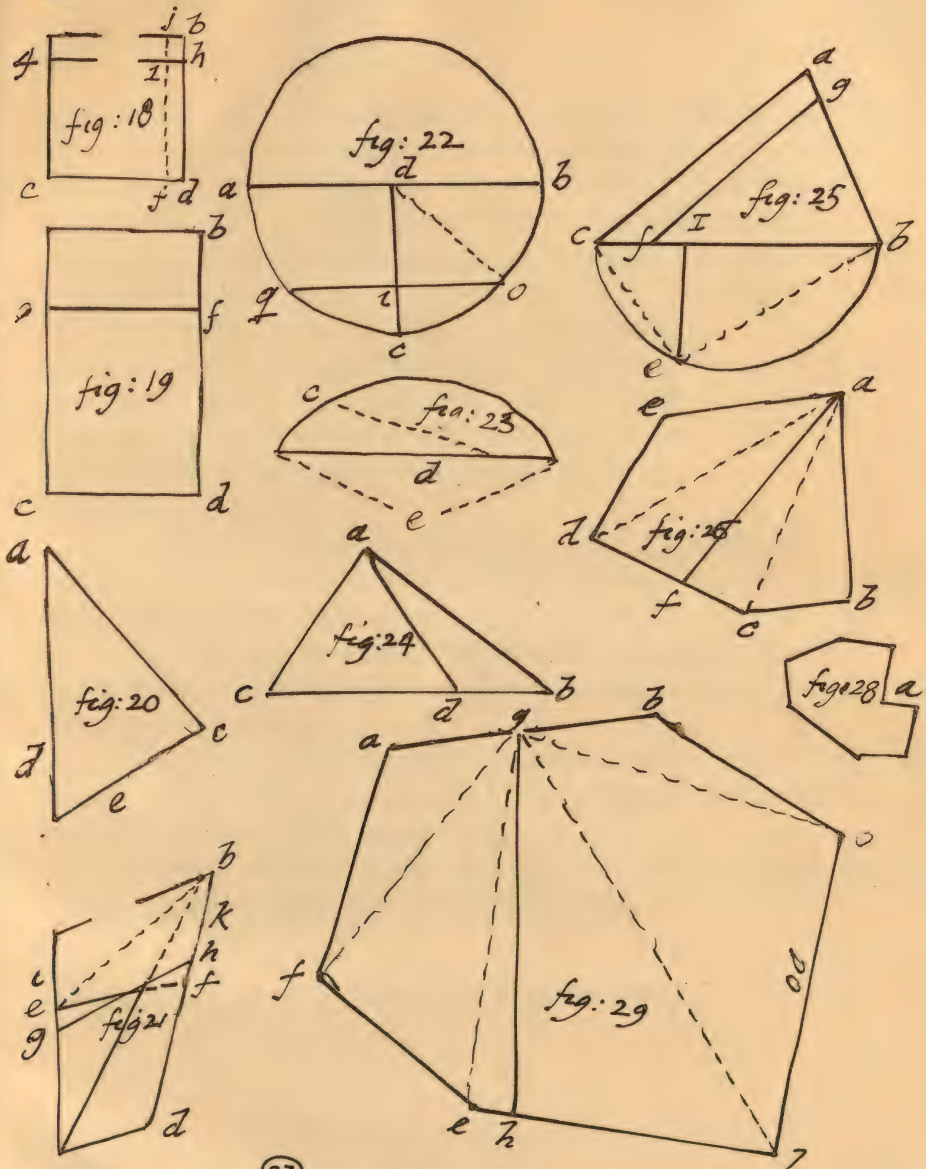


Fig 5 6 7 and 8 By a Scale of 42 Ell in the Inch fig: 9·10·11·12·13·14·15·20 and 17. By a Scale of 84 Ell in the Inch.



(23)

Fig. 18. 19. 20. 22. by a Scale of 42 falles in the inch alben fig 19 is also Applyed to 400 (and fig: 21 to 20) falls in the inch and fig: 24. 25. 26 and 27). By 40 falls in the inch.

2 parts *viz.* first the doubling the whole quotient for your divisor, by which you divide your dividend, as in common. Secondly the substracting the little squair; (whereof the last Figure in the quotient is allwayes the Root) and hencefurth in every operation, if never so many, you must allwayes now proceed as in this second operation.

But to find the squair Root of a Number consisting of whole Numbers and Fractions, as 930.25 the squair of fig. 18. work as if all were whole Numbers, as before, untill one Figure of your divisor come under the Fraction of your dividend, and then the rest of the quotient is Fraction, as in the Example is plain.

930.25 (30.5
960 05
62

But to find the Root of a Number, that is not a squair Number, as 19. fower is the neareſt, and there remains 3. now, how to know the denominator of this Numerator, is to double the quorient and add one to it, and that is allwayes thedenominator to any Fraction happening in Roots; here the Root of 19 is $4\frac{3}{9}$.

3
19 ($4\frac{3}{9}$
16

I have given you the Geometricall demostration of the squair Root, which shewes the reason of its Arithmeticall operation; and this I could never find in any Book.

I confess I need to Apologize for these and the like digressions, but the earnest desire of severalls forced me.

Place the Figures here.

THE SECOND PART
Of the
SCOTS GARD'NER,
Treating of the Culture of Plants.

CHAP. I.

Of the ſeveral wayes of propagation.

Am not to diſcribe the varieties in the Tribes and Kindreds of Plants,(ſeeing I am not now writing a Herbal) but only what is moſt material to their propagation and improvement: wherefore I ſhall ſhew,

Firſt in general the ſeveral wayes of propagation, and then particulary ſome of the moſt uſefull.

2. The ſeveral wayes of increaſing them are.

Firſt by ſeeds, Kyes, Kirnells, Nuts, Stones.

Secondly by off-ſets, Suckers, Slivings taken from the mother-Plant.

Thridly by Cuttings, Stems, Slips ſet without Roots.

Fourthly by laying the branch of a growing Plant down into the Earth.

Fifthly by carrying up ſoil to it, where it will not bend down.

Sixthly by various wayes of Graffings.

Laſtly by ſeveral wayes of Inoculation.

The buſineſs of this Chap: is to ſhew the manner and time of performing each of theſe wayes.

3. And firſt by ſeeds, choice them from the faireſt Plants, full ripe, the day fair, and Plants dry. Lay them in the Sun and open air a little, ſome for Rubbing out, others for winning in their husks. And as you ſhould not ſow Fruits, Kirnels, Nuts, or Stones with the Fleſhy part on, (but eat or Rub it off by Rolling in ſand, and then dry them a little) ſo nor waſh, Weet, or ſteep them. Neither keep any long after they ripe, the moſt part will keep till ſpring, but then many will ly till the next, eſpecially ſtony Seeds, Berries, and Kirnells. I do not mean, *Aſh*, *Holly*, *Yew*, *Mezeriom*, *Hawthorn*, &c. Who naturally lies a year longer, albeit ſowen Immediatly when gathered, yet even ſome of theſe namely the holly will ly ſometimes a year longer than their uſuall time, if the fleſhy part be not Rubbed off.

I might ſay ſomething of the timely Interring Tulips and others, but I come to the manner of ſowing: which is,

To cover the ſeed with the mould, whereof there is ſeveral modles according to the nature of the ſeed, Soil, ſeaſon, or fancy either to ſow the Ground and turne the ſeed in under the furrow, or by drawing trenches in the ſoil, and then drawing the earth over them with a haw, or ſowing the bed ready dreſt and hacking in the ſeed with the ſame Inſtrument, or by Harrowing, Raking with a Rake or drawing buſhes over the ſowed Ground to cover the ſeed, or to put off the ſurface of the whole bed with the Rake head and ſow thereon, then draw on the mould again with the ſame, and having caſt up the furrows with aſhovell, ſmooth the bed with the Rake, or make drills by lines in made up beds, ſow and cover the ſame with the Rake head, not diſordering the Ranks, or to ſet the ſingle ſeeds with ſticks by lines, or to ſow the bed, and then to ſift fine mould thereon, &c.

Sow the ſtrong and hardy deeper than the ſmall and tender, and ſow ebber at ſpring than before winter, and deeper in a light, than a ſtiff ſoil.

Albeit

Albeit I uſe for the moſt part to Plant and ſow every ſpecies by themſelves, yet you may ſometimes uſe mixtures, as Carrots and Radiſh in one bed, becauſe the Radiſh may be gone e're the Carrots require much Room. Among new ſet Liquoriſh ſow Onyons, Radiſh, Lettice, and you may ſow Radiſh, Lettice, Parſly, Carrats, Parſneeps together, gathering each in their ſeaſons, the Parſneeps will ſtay till winter. And drop Beat-Rave or parſly in your onyonbeds to ſtay winter after onyons ar gone. Alſo Beat-Rave, Skirrets, Beans, at conſiderable diſtance in the Intervalls of new Planted Artichocks, alſo at a great diſtance among cabbages, or in the edge of the furrows of other beds.

The moſt naturall time for ſowing is, when the ſeeds of their own accord falls into the ground, nevertheleſs that many doth well at this ſeaſon, as ſtony ſeeds and ſuch as can endure winter, yet the tender which ar many with us, doth beſt in the ſpring, but for convenience we ſow at ſeverall other ſeaſons, as in ſummer, (at which time they require watering and ſhade) and in Autumne (which is the only ſeaſon for ſome) who if tender requires defence & ſhelter; nor can we have others early at ſpring without hot beds, which is required in ſpeciall by ſuch as comes not to perfection in our ſhort Summer.

Endeavour to ſow when the ſoil is in good temper, a hot-furrow is good, but ſome grounds will not harrow or Rake when new delv'd or Plow'd, which when expoſed ſometime to air, Froſt, Sun, and Showres doth crumble and fall tender; hence ought ſuch to be prepared by fallowing. See more particularly the manner and ſeaſon for each ſort in their reſpective Chapters following.

4. Suckers ar theſe which growes, Runs, Springs off, or about the mother-Plant, whereof is made off ſetts by ſevering or parting them off therefrom.

Take off theſe on Trees and ſhrubs with a violent but cleanly pull, be carefull of bulbo roots and Anemonies, that you wound not the mother-Plant.

To force ſuch as are unapt to put forth Suckers naturally, you

may bair the Root, (of theſe of a woody ſubſtance,) cut it into the pith, ſlit it down a little, and put in a ſtick to keep the gap open; level in the earth again: ſo ſhall that lip raiſed ſpring, (and ſo much the better if there was an eye immediatly below the cut.) When the branches are grown, cut off this Plant to live by it ſelf.

Another way is to cutthe Root through a little diſtance from the Tree, with a cleanly ſlop down-wards, and raiſe up the butt-end of the Root, ſo cut off till it be a little above the ſurface, as for Root graffing hereafter diſcribed, *level in and trade the Earth again:* ſo ſhall the piece left at the Tree ſend furth young Roots, and the Root ſo cut and raiſed ſend out a Top.

Better Earth for Bulbs and other Roots, will aſſiſt them to put forth Suckers.

Cutting the Tops of Fibrous Rooted-herbes, in growing-time will help them to off ſets, and to laſt long too.

The ſeaſon for ſevering off ſets of Hardie-trees that loſe the leaf, is latter end *October* and beginning *November*, albeit you may alſo any time till *March*, weather open.

Young Tender-trees, with Hardie-greens, let the winter froſt be over, and before the ſap riſe, *April* beſt for greens.

Bulbo and Tuberous Roots, when they have done ſpringing *i. e.* their ſtalkes and leaves beginning to wither.

All Fibrous Rooted-herbes, when ſpringing and before they run up to Flower, albeit you may Plant many after the Flower is paſt, Stalkes and leaves cut, and they ſpringing a Freſh. But the firſt ſpring is beſt.

If drought, Water Shrubs, and Fibrous Rooted Plants, upon their firſt Planting, at leaſt ſhade from the Enſuing ſcorchings, by covering the ſurface with ſome vegitable or leitter and Water through the ſame if needful.

And though you muſt Water Tubro, and Bulbo Roots, in drought once in two three dayes; yet be ſparing, and defend them from too much Raines.

5. To

5. To propagate by cuttings, is to cut off the branch or ſtem of a Plant, and to ſet it in the Earth without Roots.

Strip it of leaves and branches, Plant deeper than theſe with Roots, and in a rich and moiſt ſoil, keeping it watered and ſhaded, Untill Rooted; cut off their Tops ſave Greens, as if your cutting be 12 Inches long, let 9 be under, and 3 above ground.

The better to effect their Rooting, (if a hard ſubſtance, as Yew, Quince, &c.) Twiſt there ends a little or cleave them a piece: If tender Plants of great Pith as Jaſmines, July-flowers, &c. Cut only at a joynt or knot, and plant them: If large ſtems of Pithy Trees, as Poplars &c. Sharp their ends down to a point, reſerving the bark whole on one ſide.

If ſtock July-flowers, ſlit the Bark near the end in ſeveral parts round the Stem, fold up the Bark ſo cut, and taking the peel'd part cloſe off, Plant the ſame with this Bark ſpread as you do a Root.

The time of planting cuttings is, (if Trees & Shrubs,) a little before they Spring, and if Herbes, when ſpringing, as above for off-ſets: and let the Stems of July-flowers, and Wall-flowers be well ſhot *i. e.* ſomething firme, and take ſuch as has not had a Flower.

6. To increaſe by laying is to bend down ſome branch to the ground, and with a hooked ſtick thruſt into the ground, ſtay the ſame in its place, and cover with earth of deepneſs as you ſee fit: let the ſoil be good, watered and ſhaded in drought, and from ſcorching Sun ſheltered in Winter, if needfull.

To force their Rooting (if July-flowers) Prune off the under and withered leaves, and cut it at a joynt into the pith (*i. e.* half way through) and ſlit it up to the next joynt, thruſt down the cut part Gently into the ground, making it faſt, cover as before. If Trees and Shrubs, prick the rind full of holes at the place interred, or cut away the Bark round at the ſame place: but if the branch be ſmall, uſe it as July-flowers, and if any refuſe, ty them hard and faſt above the ſlit with a piece Pack-threed or Wyre, to ſtop the ſap in its courſe, that it may provide for Rooting. Cut off all their Tops as you

you lay them, except Greens and ſome very Pithy Trees.

The time for laying all Trees and Shrubs that loſe the leaf, is *October*, as alſo *March*, if ſecured from drought. All Greens in *April*, which therefore muſt be ſhaded. July-flowers in *March*, *April*, or *July*.

The Trees and Sherubs will be Rooted that time twelve moneths at which time tranſplant them. the July-flower layed in *March* may be tranſplanted in *July*, or if layed in *July* tranſplanted next *March* or *April*.

7. Ciruompoſition is in all caſes, as laying, ſave only that the earth muſt be raiſed up to the branch, becauſe it will not bend down to it. Therefore faſten a Pot, Basket, old Hatt or the like on the Tree (by a ſtake or ſome ſupporter) let it have a hole in its bottome, through which you muſt put the branch to be propagated, and then fill the Pot with rich earth, (having ordered the branch as before to cauſe it Root) and Water it often; willow earth or Rotten willow ſticks at the bottom of the Pot helps to retain the moiſtuer. I have effected this with clay and Cowes dung well mixt (after part of the Bark has been taken off round) clapt about with a double or triple ſwadling of Straw, or Hay Roaps.

This is a midſummer as well as Spring-work, and very notable for to propagate ſuch as can ſcarcely be otherwayes obtain'd.

8, Graffing is to take a cyon or twig of atree and place into another (call'd the ſtock) fit to receive the ſame that the inward Bark, or rind of Both may Joyn & ſaps unite, &c. Whereof there be ſeveral wayes, as,

Firſt of Graffing in the clift, ſaw off the head of the ſtock in a ſmooth place, about half a foot above ground, for Dwarffs and Wall-trees; as alſo for Standard, Aple, and Pear, (for they will ſhoot up for a body) but betwixt 3 and 4 foot for Standard-cherrie, and Plum. Pare ſmooth its head Ragled by the ſow, then cleave it a little beſide the pith, and with your Pen-knife cut away any jags, roughneſs, or blackneſs that remaines after cleaving on each ſide the clift within; then prepare the graff by cutting on both ſides from

from ſome knot or bud in forme of a wedg ſuitable to the clift with little ſhoulderings, not Ragling the end: for if the bark be raiſed at the tail or lower end of the graff, (eſpecially the Cherrie) Impeds its growing, cut off its Top about 2 Inches above the ſhoulderings cloſe behind a leaf-bud; then open the clift with the Graffing Iron, ſet the graff (or two Graffs if the ſtock be great) in the clift, ſo as the inward part of the rind of the Graff may joyn exactly & cloſe to the inward part of the Bark of the ſtock, and if it Pinch, as great ſtocks will, ty it not as you muſt do the ſmaller: or put in a little wedg Gently to keep it, take a Slice-bark (from the cut-off head) and cut a hole therein, as it may ſlide on, & joyn round the butt of the Graff, and cover the ſtock cloſe over in forme of a hawks hood. laſtly cover with clay tempered with *Horſe-dung*, that hath a little ſhort leitter in it, or with ſoft wax for ſmaller ſtoks: this is to preſerve it from cold & drying-winds, and from wet which harms moſt.

Note, if the ſtock ſtand perpendicular, ſet the Graff on the Weſt-ſide: if not, then place it on the upperſide: if you fear winds ſupport them with ſticks as Splinters to a broken bone.

Unbind, when you find their bands harme them, towards midſummer, at which tyme top ſuch as has ſhot ſo large as to be in danger of breaking with the winds, eſpecially them Graffed in the Bark, hereafter diſcribed.

Pull up Suckers, cloſe and cleanly from the Roots: alſo Rub off buds that appear on the ſtock. Graffs cannot thrive or proſper, if the ſtoks be uncleanly or illthriving, and this is occaſion'd through bad training.

Another way of clift-Graffing is, to cleave the Graff and not the ſtock. Thus: prepare the ſtock and Graff as for ſhouldering (next diſcribed,) then with the Pen-knif, cleave the inward face of the Graff in the cut part, and cut up the ſtock with a ſlop, ſo that one lip of the cliſt-cyon may by bound on the one ſide of the ſtock, and the other longer lip on the outſide, as in ſhouldering.

The Graff ſits here, as on a ſadle, with a leg on each ſide the ſtock,

and therefore will better reſiſt the Winds; as alſo the wound cauſed by the clift, will ſoon recover. I have them wholly healed the ſame year, wherein I Graffed them.

Shouldering is to cut off the head of the ſtock, and ſmooth it, as at firſt; then cut the Graff from a knot, or bud on one ſide ſloping about ane Inch and half long, with a ſhoulder, but not deep, that it may reſt on the head of the ſtock. the Graff muſt be cut from the ſhoulder ſmooth and even, ſloping gradually, that the lower end be thin: place the ſhouldering on the head of the ſtock, and mark by the end of the cut part of the Graff, and cut away ſo much Bark of the ſtock as the Graff did cover; then place both together, that the cut parts of both may joyn and ſaps unite one on the other: bind them cloſe together with baſs, and hood them with clay tempered with dung or wax, as before.

Graſfing in the Bark may be uſed in greater ſtocks, or in regraffing of old trees, and is only for aples; becauſe later in performing, which may be the latter end *April*, when the Bark of the ſtock will peel: for when both ſtock and Graff is prepared, (as in ſhouldering) inſtead of cutting away ſome Bark of the ſtock; for receiving the Graff you muſt ſlit it on the South-ſide from the top allmoſt as long, as the ſloped part of the Graff, and looſen the Bark at the top of the ſlit with the point of the half round wedg, (made a purpoſe tapering down-wards to a point) which alſo thruſt down between the Bark and ſtock, to make room for the Graff; but firſt cut a little Bark at the thin end of the ſlope of the *Cyon*, that it double not in going doun, yet leave it with a ſharp edg; and becauſe when the *Cyon* is put in, it will bear the Bark hollow from the ſtock nick or ſlit, the Bark on each ſide the cyon, ſo that it may fall cloſe to the ſtock and to the edges of the cyon; then bind and cover, as before.

Graffing by approach, is good for theſe that holds not well otherwayes: but herein the ſtocks muſt be placed ſo near the Tree, (where the graffs are) that the branch may reach it; then may you clift or ſhoulder-graff the twig yon mean to propagate, into the ſtock; and as ſoon as graff and ſtock do unite and ar incorporated together,

cut

cut off the cyon or graff underneath, close to the graffed place, that it may subsist by the stock only.

Root-graffing is, to take the twig of any Tree you mean to propagate, and a piece Root of the same kind (cut and Raised up a little as in sect 4.) and graff them by shouldering, uniting the buttends of graff and Root, causing the rind of the Root Joyn to the rind of the graff, and so bind them: the next year they may be Transplanted to nurserie; these will be easily dwarffed, & readily hold, beside that the defect of Stocks ar supplyed, and they fit for transportation.

There be many other wayes, but these nam'd ar the most material.

The time of graffing is, when the sap beginnes to stirr in the spring; you must begin earlier with Cherries, Plumes, some later with Pears, ending with Aples.

Choise not your graffs from such Trees as ar ill-Bearers, neither from such as has not come to bear at all, but from constant and well bearing Trees, and the fairest and fullest of buds thereon: let them have a piece of the precedent years shot, whereof make the tail and shouldering Immediatly below the butt of young wood; and if the stock be large, make the graffs wholly of the lasts years shot; and such (having blowing buds actually upon them) I have seen bear fruit the same year. But some old bearing Trees yields no graffs: wherefore you may cut out some great branch, that it may shoot anew, or rather take off the same branch by circumposition and plant; the which new Tree may furnish you with graffs. Cut your graffs e're they sprout, and keep them or carry them, their ends in clay, or dry in a box, their tops cut off.

9. Inoculation differs from the former wayes of graffing, and most proper for Apricoks and peaches: any sort will more readily hold by this than by graffing, except Cherries; they come quickly to be a Tree: for I had a plum shoot above 6 foot, 10 Inches the first year; and thô they miss, yet the stock is not the worse. Therefore.

In ſome convenient and ſmooth part of the ſtock (at the ſame hight as for graffing) with the penknife cut the rind overthwart, and from the midle thereof gently ſlit the bark about an Inch long in forme of. *a T*, not wounding the ſtock; then nimbly prepare the bud by cutting off the leaf till a little of the tail, then ſlit the bark on each ſide a little diſtance from the bud, and about half Inch above and below the ſame, ſharp that end below that it may the more eaſily go down, and having a quill, cut more than half away about an Inch long at the end, (for dividing the bud and rind from the ſtalk) therewith take it off dextrouſly and leave not the Root behind: for if you ſee a hole under the bud on the inſide, the Root is gone, call it away and prepare another. when the bud is ready, then with a bone (made half round and ſharp at the point tapering on the one ſide) raiſe the bark or rind on each ſide the ſlit carefully, not hurting the inner rind, and with care put in the bud, thruſting it down till its top Joyn with the croſs cut: then bind it cloſe above and below the bud with dry'd Ruſhes or baſs. Or,

You may ſlit the bark of the ſtock upwards from the croſs cut. Or,

Cut the edges of the bark about the bud oblong ſquair, and the bark of the ſtock fit to receive the ſame. Or

Reſerve $\frac{1}{4}$ of this ſquair piece bark of the ſtock untaken off at the upper end, which muſt be raiſed, that the ſhild may ſlide up betwixt the ſame and the ſtock; and ſo bind gently, as before.

The time for Inoculation is, when the ſap is moſt in the ſtock, namely from *June* till *Auguſt*, neer a moneth after unbind *i. e.* cut through binding and bark with a gentle ſlit on the back ſide of the ſtock, leaving the binding to fall away of its own accords: at which time you will ſee who holds. In *March* following, cut off the head of the ſtock 4 Inches above the bud, and that time twelve moneths the ſtub too, that it may heal over the wound. you may prune as graffes, and pull up ſuckers &c. See Chap: 4. for more.

Choiſe buds from good bearers, as before, take them from the ſtrong and well growen ſhoots of the ſame year, and from the biggeſt end of the ſame, and if you muſt carry them farr, firſt cut off

their

their leaves, and top of the Stalks and wrap them in moist leaves or grass.

This much at present in general for time and manner of the several wayes of propagation.

10. In planting all plants prune their Roots, that is, Top them a little with a sharp Knife except Asparagus. Also cut their heads except Greens, and Tops of Forrest-trees ordain'd for Timber, yet the Side-boughes must, that the head may be proportion'd to the Root.

Plant no Trees deep; (albeit some deeper than other) when their Roots runs near the surface, there they receive the beneficial influence of Sun and Showres, that makes vegetables fair and Fruitfull.

Lay leitter or the like above ground the Compass of their Roots, especially the first year of planting. and indeed all plants require some shelter & shade with Moisture, when first planted, till they get Rooting and strength.

Cut the leaves and stalks of flowers and herbes, when past flower or yealded seed, nor at any tyme suffer too many, rather purge them in tyme. no more branches, flowers, fruits on any tree, or plant, than the root can nourish perfectly.

Neither plant and sow every year the same plants, on the same Ridg or Bed: for it Improves them to be changed. see more fully planting, pruning, preserving, &c. in their respective places following.

CHAP. II.

How to Cultivate, and prepare grounds.

1. HAving ſhew'd the ſeveral wayes of propagating plants, it is alſo moſt requiſite that you prepare the ground for effectuating the ſame. And that is in the firſt place,

To trench it, *viz.* Begin at one end of the ground, (you mean thus to culture and open) a trench from one ſide to the other, thereof 3 or 4 foot broad, and from one to two foot deep, as the qualitly of the ground admits and plants require (therefore liquoriſh muſt have deeper,) this being open, meaſure off other 4 foot parallel at its ſide, turne that into the open trench, with the turf or ſurface in the bottome, and the clean earth on the top; the filling whereof emptieth an other, therefore cut off other ſower foot and turne that in as before; thus trench by trench till the whole be finſhed. I preſume you carryed the earth of the firſt trench to fill the laſt, or otherwayes filled hollowes therwith, and left the laſt trench open, (if convenient) for receiving weeds. Or if the ground be hollow in the midle begin there, and trench both wayes to help the level; if high in the midle, begin at both ſides or ends till the two open trenches meet at the hight, for the ſame reaſon.

The latter end of harveſt the ground is ſofteſt for trenching, and it lying all Winter open to the weather is thereby meliorated. For as trenching doth well prepare hard, barren, and untoil'd ground, ſe doth it ſuch as is exhauſted by long and unſkilfull uſage. and if at every trenching you apply proper manures mixt with the ſecond ſpading, or under the laſt ſhovelling, and in 5 years retrench, it will become to your wiſh, for all gardens, and plantations.

2. The next excellent way of preparing ground, is fallowing; begin as ſoon as you reap the crop, but let the ground be ſomething

thing moiſt, albeit you ſhould ſtay for a ſhowre, if this be not late in Autumne, you may fallow in *November:* eſpecially if ſtiff ground and reſtirre in *March* or *April* when you plant or ſow; and albeit you ſhould neither plant or ſow it that year, keep it clean of weeds in ſummer by hawing, &c. and at Autumne fallow again. but as in trenching ſo in this work you ſhould mix with proper ſoil.

Make uſe of the *Engliſh* faſhion of ſpades which are now common, and let every two delvers, have a ſhoveller to caſt up the ſmall that falls in bottom of the furrow, and the Delvers ſhould turne up the point of the ſpade, and nimbly break and chop all the clods throughly; this is very material as well as the through mixing of the manures with the ſoil: So that mixing, ſtirring, reſtirring, fallowing is moſt pertinent for the cold, chilled, barren Rugged-natur'd-ground in *Scotland* all which ſoftens and tenders it, and ſo fits it for nouriſhing good ſeed and plants, as I can tell by experience, therefore.

3. I adviſe our Husband-men alſo to the fallowing of their land, as one; flitfolding the ſame, as a ſecond; Watering, or overflowing land, as a thrid, burning the Turf as a fourth, draining exceſſive moiſture, as a fifth; applying proper ſoils and manures, and that at proper ſeaſons, as a ſixt; laying the land to reſt, as a ſeventh; and above all, incloſing and planting about their land, as the laſt, and beſt *improvement.*

Example: At the Autumnal fallowing, delve, or Plow deep, and apply hot unrotted and uncompound dungs and manures: at ſpring re-plow or re-delve, and apply ſuch dungs and manures as has layn mixed and rotted with Earth; then Mix, Rake, or Harrow. The ſummer following is to deſtroy the weeds, and may be done by Turf, Plough or by hawing.

The Huſhbandmens flitfolding is equivalent to Gard'ners covering the ſurface, eſpecially of dry and barren ground with leitter, &c. The dung and urine of Sheep and cattle waſhes evenly into ground, and ſhould be turned down by the ſummer,

and

and Autumnal fallowing, leſt its ſubſtance exhauſt by Sun and Air, (except that for graſs, then only harrowed with a buſh of thorns) inſtead whereof Gard'ners ſhould top their coverings of leitter with a little Earth or Sand, and at Autumne delve all down together.

Husbandmens watering is by Running Plough-furrowes (and trenches where needful) alongſt or croſs their land, ſo as the water may gently ſweem over the whole: this in the Winter, on dry and barren grounds, which leaves Sulphureous pinguidity behind it, and ſtrongly improves either for graſs or corn; but that this Husbandry ought as well to be practiſed on wet grounds, is evident, that the Running of this carryes away the ſowr quality of the other. I ſhall ſpeak of Gard'ners watering more particularly.

Burning land is, to pare its ſurface with the Turf Plough and lay the ſame in heaps to burn; and ſo ſpreads the aſhes: but if moſs and heath, ſet fire through, without turfing it; this deſtroyes the noxious ſowr nature and the ſalt remains in the aſhes, for the ſtrengthening the Spirit of the Earth.

Draining the wet, bogie or dropſical ground is, by trenches a little deeper than the Spring, (how deep ſoever) and then apply lyme, ſoot, aſhes, pigeons dung, &c. As for the abounding of ſuperficial water, that is eaſily helped by common waterſowers, or in ſome grounds by ſinking holes down to the channel.

As the Husbandman ſhould have his land layed out or divided into ſeveral cloſes, ſome for corn, ſome for medow, and others for paſture: ſo when he has taken 5, 6, or 7 crops of corn, he ſhould lay it out for paſture, otherwayes it will wear out of heart; and likwayes the paſture muſt be plowed up for corn, eſpecially when it beginnes to grow moſſie.

The way that the Gard'ner turns his ground to reſt, is by trenching and retrenching, whereby it can never wear out: albeit he alſo obſerves to change the crops as well as the Husbandman.

How

How to Incloſe and plant about your land ſee Chap. 4.

4. Among all the Varieties of ſoils, that next the ſurface of them is beſt, becauſe prepared by the Influence of Sun and Showers,

That called a loam or light brick Earth is the moſt natural ground for gardens and plantations; ſtrong Blew, White, or Reid clayes are worſt: but the nearer they be to a mixture of loam (or if they have ſtones naturally in them) they ar the better; alſo, the nearer gravelly or ſandy grounds incline to loam, ſo much the better. therefore if your ground be ſtiff, trench with ferns, ſtraw, bean-ham, thatch, leitter, Earth under woodſtacks, ſmall ſticks, &c. If gravelly or ſandy, then trench and mix with loam or the upper part of clay, the Turf of both is good.

If ſtrong clay, trench and mix with fat ſand, highway Earth that hath drift ſand in it, Rubiſh of buildings, Lime-Rubiſh, gravel. And if it be for gardens or orchards, enrich it with dungs mixt with drift-ſand or light mouldheaped up *ſtratum ſuperſtratum i. e.* laying by laying. And if the ground be cold, the more pigeons and poultrie dung you put in it, the lighter and warmer it will be. Or make *Stratums* of Earth, dung and unſlaked lime-ſtones to ly a year, and then apply this compoſition, which has been hitherto a great ſecret: therefore prize it.

Binding grounds, which will not Rake as you delve, if dry and hard, trenching and fallowing expoſeth them to be ſoftned by weather, as is ſaid: But if wet and tough, mix with Aſhes, ſea-Sand, &c. In Culturing.

For preparing my compoſts, I uſe a pit (wherein ſomtimes I make a hot-bed) oblong, about 4 foot deep of length and breadth, as I can get dungs, Vegetables, and ſoils to fill it: here to lay all Kindes or ſorts with *Stratums* of Earth, as horſe, neat, Sheep, Pigeons, and Poultrie dung, ferns, weeds, leaves, ſoot, aſhes, ſticks, ſaw-duſt, feathers, hair, horns, bones, urine, ſcouring of pondes, ditches, blood, pickle, brine, ſea-water, the the cleanſing of Houſe of Office, &c. Let them ly a year at leaſt,

but not above two: then take them out and there Stirre, Air, mingle and work them with fresh Earth or by themselves, as you have occasion, till they become sweet and of an agreable scent; (yet retaining their vertue) this frees them from the noxious qualities they otherwayes retaine, and consequently not so apt to gender or produce Worms, Weeds, and Mushroms instead of wholsome and pleasant plants, fruits, and Roots for the table.

5. Observe what manures are proper for the soil, as, *all hot-dungs* and manures are proper for cold, stiff, and moist grounds: so all rotten and cold dungs and manures are proper for dry and hot grounds. All manures that retaines moisture are for poor, Sandy and Gravelly soils

As, Horse-dung for stiff and cold ground; Sheeps for hot and dry; Ashes for cold, stiff and moist; old Woolen-rags for poor dry; Lyme most excellent for moorish and heatly land; Hair of Beasts for dry and stiff grounds; pigeons and poultrie dung for cold and moist; Rotten saw dust for dry; Rubish of buildings for stiff, cold grounds; Salt for cold and moist; use it moderately, it destroyes vegetables on dry ground, especially at first, but when melted by Winter Raines, it fertilizeth: Some has sowen it on moist, moorish land to great advantage, for being farr from the Sun we have little volatile.

6. In your applications you are to consider, that Rotten dungs and manures are proper for Trees and such slow growing plants, and unrotten dungs and manures for Annualls, they being quick of digestion.

Let not the Root of any Tree stand on dung, farr less unrotten dung which burns them; but upon prepared and proper soil, and composed, well mixed, aired, stirred or fallowed. Most fit is the cleansings of streets and highwayes together, with the mud and scouring of pondes and ditches, if first layed on heaps in the open Air to rott and sweeten, and if you mix it with stratums of Lyme that adds much to its goodness and fertility.

Forrest-

Forreſt-trees require not ſo much dung as Fruit-trees, but well mixed and ſallowed ſoil.

Kitchen Herbes and Roots requires very fat, light, warme and well cultured ground.

Flowers and fine plants cannot endure ſoil too rank with dung, neither can they proſper if it be poor; but freſh, clean Earth with rotted neats dung well beaten and mixed together, and a little rotten willow Earth a little below the Roots: here comes in that delicate *ſoil*, the Turf of the paſture mixt with a little Lyme, Cowes and Sheeps dung, well rotted and mingled as before. See more particularly what ſoil each kind or ſort of plants delights in or loves beſt, in their reſpective Chapters and Sections following.

7. As for making the hot-bed for raiſing early and tender plants, dig a pit (4 foot deep, and of length and breadth, as you have occaſion) in a convenient and warme place, lying well to the Sun and ſheltered from winds (which you may help by art, if not ſo naturally) fill it with dung and leitter from the Stables, about a fourthnights gathering, (ſome makes it of Barley-ſtraw, or the ſame mixt with bran, becauſe it keeps heat long, and its heat not ſo exceſſive nor ſo noiſome to plants as dung) and when well Tread, and even on the Top, lay about 4 Inches thick of rich, light (but freſh and clean) ſifted mould thereon: arch it over with ſticks, and cover with matts 4 or 5 dayes to cauſe it heat, then uncover and give it Air a day or two, that its violent heat may paſs; then ſow your ſeeds and cover the bed again. And the next day if you find the bed over hot give it more Air, if too cold caſt ſome Straw on the covering untill the heat return; ſo by airing and covering you may keep it in a conſtant temper: when the Seeds come up, give them Air to dry the moiſture raiſed by the heat of the bed. How to cover the choice with Glaſſes, ſee Chap. 6. Sect. 1. But as there is great trouble in rightly ordering this ſort of hot-bed; ſo here remedied by a better, which is only to fill and tread the pit full of new dung and leitter, (not covering it with Earth) and place wooden caſes therein, about 9 or 10 Inches deep and about 3 foot broad, (having wood-handles

at the ends) boar them full of Auger or Wimble holes at the bottome, fill them with the foreſaid earth; and therein ſow your ſeeds: and theſe caſes and the earth in them will be kept warme during the whole ſeaſon, wherein a hot-bed is neceſſary. for if it loſe heat add freſh dung and leitter under, about and betwixt the caſes; (there is Dew on the Glaſſes, while the heat remains, but if exhauſted, they will be dry) conſequently the trouble of tranſplanting from one hot bed to another is hereby ſaved. Provide a ſhelter over the whole, if you pleaſe, and frames of Glaſs over ſome of the inſide caſes, where there is moſt need; others you may leave open, as your Seeds requires. By this your pit and caſes are every year ready to your hand, requiring only a ſupply of freſh dung. But this pit will be ſo much the more excellent, if lyn'd round at the ſides with brick: and where you cannot conveniently ſink it for Water, you may build the ſame above ground. And when this pit is empty it will be alſo ready for wintering of Flower Pots with *July-flowers*, &c.

8. In watering plants, uſe not well-water, eſpecially for tender plants, neither Rivers that run long and quick on ſharp gravel: theſe yields no nouriſhment to plants, but rather chills them; therefore if you muſt uſe ſuch, let them ſtand ſometime in the Sun and open Air, uncovered in tubs, mixt with dung, and powr it off the dreg when you uſe it. let the quantity and quality of the dung be according to the nature of your plants (as if great growers and require much heat, put horſe or pigeons dung into the water, but for the more durable put Sheeps dung) remembering if your ground be bad, to add the more dung.

When dung lyes above ground about any plants, (as I uſe to do with Trees, Artichocks, &c.). The water deſcending through the ſame is very reliſhing to the Roots, if you powr the water at a little diſtance round the Tree: for when laſhed on the ſtem, it waſheth the Earth from the Roots.

Water no plants with ſtanding, ſtinking Ditch-water, nor no Water that ſtinketh: Rain-water and large Ponde-water is excellent, but keep it not too long; yet if in a large Veſſel, the

of-

oftener you Stir it, the longer it will keep ſweet: ſo the larger your pondes or Rivers be, and the opener to the Sun and Air, and the more moving by horſe, geeſe and ducks their Sweeming, the ſweeter it will be. and if the waſhings of ſtables, ſtreets, dung Hill-water, &c. Run into them, that adds much to their fertility, providing they have ſome moving, as is ſaid, to make them ſweet.

If you fear dry weather differre not too long, but water while your ground is yet moiſt; differre not, if you mind to water at all. theſe that Root deepeſt, water moſt. and alſo when you do begin, Continue it ſo long, as you find occaſion. In watering Trees and greater Plants, ſtir and waken the Earth a little about their Roots with a fork, ſo as it may drink the more evenlier, minding to tread firme again. And for the ſame cauſe you may ſink the Earth a little in forme of a ſhallow diſh rownd your Coleflowers, Artichocks, &c. Dip your Flower Pots in a Tub of water, to drink through the holes at the bottome.

When you water beds of ſmall ſeeds with the watering pot, ſhake it nimbly, that it may fall like a ſhowre of ſmal Rain. I have often made uſe of a handful of ſmall Straw or Hay drawen as thatch, tyed in the midle, and at one end powred water with a Cup, and ſhaked the ſame that it appeared like a Gentle bedewing rather than a glutting Rain.

Some that are deſirous to have the ground allwayes moiſt about any plant, do place near it a veſſel with water, and in it a piece woollen clothe with one end thereof hanging out to the ground, and the other in the water: the Cloath being firſt wet, it will drop continually, if the end without be lower than that within the veſſell: and when the water within fails, it may be augmented; If it drop not faſt enough, the clothe may be increaſed, if too faſt, diminiſhed.

Early in the Spring while the weather is yet cold, I intreat you be cautious in watering the leaves of the young and tender plants, only wet the ground about them when your plants or

ſeeds are more hardy and the nights yet cold, water in the fore-noons: but when the nights are warme, or dayes very hot, then the evening is the beſt time.

Plant in wet, and ſow in dry. I do not mean over wett or over dry. Withall let them have good Air, which conduceth much to their health and life, without which nothing can live.

CHAP. III.

How to propagate and order Forreſt-trees.

1. OMmiting here the diſtinction of ſpecies, (having confin'd to one chapter) I ſhall ſpeak briefly, yet I hope plainly of their Governement, thus:

Albeit the moſt of Forreſt-trees may be Increaſed by Suckers, Layers, &c. Yet if you deſire Trees worth your while, Raiſe them from the ſeed. Therefore prepare a ſeminary or ſeed-plot together with a nurſerie well ordered and handſomely made up in beds, as in part 1. Chap. 5. ſect. 2. and there ſow and ſet your ſeeds and plants in their reſpective ſeaſons; keep them clean from weeds, and water them when need is: alſo Earth up and dible in theſe caſt up by the Froſts, as well as ſhade and ſhelter in time of neceſſity. Let them ſtand ſome but one, others two years in the ſeminary after they riſe, then remove and plant in nurſerie, a foot one way and half the other diſtance, or 5 Rowes in the bed (if 6 foot broad,) in ſtraight lines, having firſt prun'd their Roots, eſpecially toped the main Root that runs ſtraight down; ſo ſhall they ſend furth ſyde or feeding Roots, and agree well with tranſplanting thereafter. Alſo proportion the head to the Root by pruning up the ſide boughes, reſerving ſome ſmalleſt afterwards all the way on the body, to ſtop the ſap in its courſe, that the Tree may grow great with its hight, and this will prove the beſt fortification againſt the winds.

Cut

Cut not the tops of these Trees you ordain for Timber, except some grow crooked in the nurserie; these save Greens may be fell'd near ground in the Spring or at midsummer, and train up the streightest shoot again to be the Tree. When they have stood 3 years at most in this nurserie, replant them at a wider distance in Spad-bit trenches, 3 foot one way and two the other, where they may stand till they be ready for planting out in your Avenues, Parks, Groves, &c. Which will be in 3 years, if thir Rules be observed. *But if you think them* yet too small for setting out, you must transplant at a wider distance, and at every remooval Top all their Roots with a sharp Knife, and thin the side-boughes for lightning the head: but do not prune up all, as is the Custome of the ignorants, whose Trees are so long, small and top-heavy, that they cannot stand; but of *pruning more hereafter.* If you neglect this transplanting and pruning the top Root, while young, your essayes to do it when old will prove ineffectual, nor will they ever be worth the while.

All the time that your Trees remains in nurserie, and at least the first and second year thereafter, be carefull to cleanse them from Weeds and Suckers by delving, hawing, &c. The advantage here shall soon counter-ballance the cost.

Choice your Seeds from the high, streight, young and well thriving Trees; and the faireſt, weyghtiest, and brightest thereon: for its observed that the seeds of hollow Trees (*i. e.* Trees whose pith is consum'd) doth not fill well or come to perfection, as *Langford* sayes of Pears, concluding that the Kirnells of Fruit depend much upon the pith. And I bid you reject such as was never set by art, as Peevish parents for Children, that must be thus accommodat with uncouth lodgings as well as dyets in their travells: Its a mischief in many people that accompts all ridiculous, that they have not been bred up with or accustom'd unto, so with Trees in some respect.

2. As for the Oak, the Acorns we get from puts furth a lustier shoot than ours; nor do I approve of them in natural woods, they ripe beginning *October*, gather them in a dry day, and lay in some open Room to dry a moneth, turning them with a broom, then lay

lay them in a couch dry ſand till latter end *February*, dible them in the ground 2 Inches deep, 12 rowes in the bed, (if 6 foot broad;) they come up the ſame ſeaſon, and allthough they will grow on any ground, yet they grow better on the beſt, that is a good loamy Earth. Order them as is directed in nurſerie.

The Elm that growes with a clean and taper body is beſt worthy your care. we have extraordinary clean and ſmooth barked Elms from *Holland*: but I think they take more paines in preparing and making their Earth fine, which certainly is moſt conducible thereunto. Their Seed falls beginning of *June*, (thó it doth not fill every year) when they begin to fall, gather them and ſpread on a Clothe a little, then ſow them immediatly promiſcuouſly over the bed, and very thick covered near an Inch of Earth; I had them come up within 10 dayes: they love a light Earth ſomething moiſt.

The Aſh ſeed is ripe in *November* and *December*: having ſpread them a little to dry, put them in a hole *ſtratum*, *ſuperſtratum* of Earth and Seed; take them out at Spring come twelve moneths, and ſow as Elm, for now they riſe; and loves a tender ſoil not too moiſt.

The great Maple, commonly, but falſly called Plan, its ſeed is ripe in *September*: ſow it at Spring it, comes up that ſeaſon: affects a ſoil with Aſh or rather better.

The ſmaller Maple is rather for Hedg, its ſeed lyes as Aſh.

The Beach ſeed ripes the end of ſept: but it fills not well every year, nor ar we ſo very plentiful of old trees, as could be wiſhed: for that cauſe we ſend abroad for ſeed. as ſoon as it comes to our hand, it may be ſowen, or rather keept in a couch of ſand, as the great Maple till the ſpring, for it comes up that ſeaſon: affects a light ſoil, no clayes.

The Walnuts, and cheſtunt, albeit they be fruit trees, I plant them without the orch: walls, their nuts ripes beginning of *Octob*: when they begin to fall take them off and rub off the outward husk, but do not weet them, then order them as accorns; they come up the firſt ſea-

seaſon and affects a hight loamy earth. I could wiſh for more horſechesnuts their ſeed from turkie.

The black cherrie or green is a tree that I love well in Avenues and thickets. there is a ſort at *Niddrie-caſtle* where I was born 7. miles weſt from *Edinburgh*, whoſe fruit is preferrable to any cherrie: I take it to be a ſort of heart, but it's a great bearer; (which propertie the heart cherrie wants) they ar beſt ſtocks for ſtandard cherries. learned *Evelen* and Ingenious *Cook* takes notice of this tree.

Gather their fruit wheen full rip, the beginning *Auguſt*, eat of the fleſhy part *i. e.* the fruit, and lay the ſtones to dry a little, then lay them by *ſtratums* with earth, which prepares them, if ſow'd at ſpring to riſe that ſeaſon, otherwayes they ly till the next: they affect a light, ſharp ſoil, and if you may, mix it with compoſt; and then it ſhall be for cherries of all ſorts.

The *wild Service*, commonly called Rons-tree, their fruit ripes in *Sept:* which you may eat or Rub off by rolling in ſand; then prepare & ſow them as cherrie. They love a moiſt Ground or ſhade not wet, if you will plant them in better ſoil in Avenues, me thinks, they would be very pleaſant when ſpread over with their umblefaſhion'd, bright Red fruit.

The *Line or Lidne* tree, commonly called *Lym*, the broad leafed with odoriferous flowers is beſt. the ſeed ripes beginning *Octob*: But fills not well every year with us, and indeed we have few come to any conſiderable perfection; yet I have ſeen them bear ſeed at *Hamiltoun*. it ſhould be a little dryed in an open Room and couched in moiſt ſand till winter paſs, and then ſow'd in a little ſhade, for they muſt not be too much expoſed to the ſcorching Sun: they come up the ſame ſeaſon; but if not prepared through winter, they lie till the next. they love a freſh loamie earth (& in planting them I adviſe you to cover the ſurface of the earth about them with leitter topt with earth the firſt year at leaſt.

The *horn beam* may be ordered as ſmall *maple* they like a dry ſtiff ground, they are copſis.

The *haſſell* and filboards ſeed or nuts is uſed as wallnuts, they de-

light in dry banks, nor are they ſtately forreſt trees.

The Birch is a proper tree for much of our poor, dry and barren grounds: I never raiſed any of them by ſeed in the wood, they are ſo plentie by ſuckers, *&c.* Many of which handſome trees I have planted ſuccesfully.

The Beantree foil vulgarly called peaſcod-tree, its ſeed ripes in *Oct.* and being kept dry all winter, ſown at ſpring comes up that ſeaſon, and affects a moiſt Ground but ſweet.

The white poplar vulgarly called *Abele*, its a quick grower and pleaſant tree, ſo is *Aſpen*; they are eaſilie propagate d by cuttings; ſo the laſt by ſuckers, ſee *chap.* 1. *ſect.* 5. They love a good ſoil ſomething moiſt.

The *Alder* is ſo propagable and loves the marſhes; and ſo is

The willowes, Sallows, and oziers, they all affecting a moiſt ground and muſt be ſo kept till Rooted.

But I come to greens; as

The Pinetree and pinaſters whoſe husks you may expoſe to the ſun till they open & ſeeds fall out, to be ſowen in *March* but if late ere they come home (they requiring the ſummer ſun to open them) if you then ſow, they cannot get ſtrength ſufficient to withſtand the enſuing winter; therefore keep them in dry ſand all winter, and ſow them in the ſpring; For they riſe that ſeaſon wherein they are ſowed, they love a good and tender ſoil, they are ſomething tender while young, (as all greens are) the great Pine is tenderer than pinaſters, and nice in tranſplanting. therefore obſerve the Rule in *chap.* 7. *ſect.* 2. Shade and ſhalter in both extremities of heat and cold while young. But non ſo proper for us as

The Scots Firre, many one of their huſks have I gathered any time between *Jan:* and latter end *March*, lay them on a Cloth to the Sun which opens them, to be ſowen latter end *Aprile*, they come up that ſeaſon, and loves a ſoil with Pinus. See how to order in nurſerie: for they muſt be dibled in again the firſt year, as ſpued up by froſts; they or any Tree will grow on moſt ſorts of grounds if well ordered, and prepared and ſecured from drought

the

the first year. And therefore help the ground where its not to purpose, (they will pay you or yours for your pains) as if you plant in gravelly or dry sandy ground, mix it with clay and turfe a large distance round about the Roots: or if in stiff and moist clayes, trench 8 or 9 foot on each side round the compass of the Roots, adding small gravel, fatt sand, *&c.* And plant ebb: but enough of his in the last Chapter.

The silver Firre is so ordered, only its tender while young, and *subject to blasting.*

The Pitch Tree (as common Firre,) its a hardie Tree, and no wonder, seeing, as I am Informed, it growes by nature plentifully in *Norraway.*

The Yew is also a hardie Tree, only requires some defence while young, *their Berries ripes in Novem:* Rub off the flesh or clammy substance, and lay them to dry a little, (but not at the fire) then box them *Stratum Superstratum* of earth and seed, placing them in the shade till the spring come twelve moneths; at which time sow them, and then they spring, affects a good soil, not stiff.

The *Holly* is to be used as *Yew*: for they ly as long; its the most proper for hedges of all the plants in the World. Next thereunto, is the *Hawthorne* (tho not a green) whose seed ripes in *Octob*: and to be used as Holly: for it riseth not till the spring come twelve moneths; and the better you prepare and mix the ground with Rotted dung, the larger will they shoot. Nor let any Imagine, that Holly also loves not dunged ground, nay, (say they) poor and gravelly soil; but I know the contrary by experience.

I shall speak of some shrubs in Chap: 7. for I must leave them here, and come shew you how to transplant and prune the stately forrest trees.

3. In Transplanting remove with earth about their Roots (if you can) especially greens; at least take all the Roots up a good distance from the stem, by making a Trench round, and be not hastie: then top all their Roots with a sharpe knife, (slop tending down as a horse foot) cut off all the bruised and broken parts till you

come at firme wood, top the ſmall Roots like hair, to make them ſtiff, ſo as they fold not, when the Earth is put in, and rott thereby: proportion the head alſo to the Root by thinning it, prune ſide-boughs; (reſerving allwayes ſome for tapering the Tree) theſe you cut, do it cloſe and ſmooth by the body, ſlanting upwards, and they will ſoon overgrow the wounds, if the branch cut off be not great. Cut not the tops of *Oaks*, *Beaches* they cannot endure it, neither any Tree that you ordain for timber; albeit I have been neceſſitate to lop great old Trees, whoſe heads could not otherwayes be conform'd to their Roots, which neceſſarly ar diminiſhed upon removal. But this is not the caſe of well trained Trees in a nurſerie.

The Rule for removing old large Trees out of woods or other places, who was never before Tranſplanted, *is to make a trench* at two ſides of the Tree, diſtance conſiderable, till you can Inforce the Tree upon on ſide: then cut the top Root through, ſaving as many collateral Roots as you can; leſſen its head, or lop it if it can ſuffer, and ſo ſet up the Tree again, and tread in the earth about it, as it was; let it ſtand 2 years to emitt fibres or feeding Roots to nurſe it when Planted out.

But to my nurſed trees again. When you remove, as is directed, carry them as quickly to their new quarters as you can; let the ſoil where you ſet them be as *Connatural* to the nurſerie as poſſible, ſee the laſt *chap.* for preparing grounds and ſee part 1. *chap.* 3. and 4. for the orderlie wayes of planting.

The beſt way is to make the holes a year before you plant, and in ſummer ſtirr and turne their earth, that no weeds grow thereon: make them betwixt, 12. and 18. Inches deep, and betwixt 4, and 8. foot diameter, if ordinarie trees: but if the ground be bad and not proper for the trees, then trench, mix & apply, till ſuch become more agreeable.

When you plant, lay the ſurface in the bottome and fill up the hole with fine earth, till it can only admit the upper part of the root to ſtand level with the ſurface, (this is not to plant deep, for they that do; but

but cheat themſelves) then ſet on the Root of the tree in the midle of the hole, and if no earth adhere to the ſame, make a little hut in the middle of ſmall earth, and lay the roots right ſpread round about with your hands that non ly folded or diſorderly, then put in fine ſmall earth amongſt the roots,& ſhake and move the tree, ſo that the earth may go in amongſt them till no cavity or void be left to let in the air; ſuch roots as folds raiſe up and level in their wonted poſture with your hands ſhovelling on more earth and tread gently, then fill one more and tread well with your heels till it be as farr filled up about as it ſtood in the earth before, make the bulk about level on the top, and juſt the breadth of the hole,and it will be about half a foot above the ſurface if ordinary nurſſed trees and good ground. you may put on the rounding ſtring to make its edges circular and handſome,or if you will to make it like a geometrical ſquair, then ſtreight lines from ſide to ſide of a thicket will make up the bulks that the whole will appear as walks and bordours two wayes: lay new horſe dung and leitter or ferns above the bulk (ſo as it touch not the ſtem) covered with a little earth to keep it from drying, the Rains will waſh in its ſubſtance and refreſh the Roots, beſides it keeps out ſummer drough and winter froſts.

The firſt year at leaſt go through, now and then, and tread them right after winds. I am not for ſtaking trees (but for training them ſo as they may not need it,except you drive three ſtakes about each tree at the out ſide of the bulk, then the double ſtraw Roaps tyed from its body to all the three ſtakes will ſecure; and if you faſten croſs ſticks briers and thorns, here ſhall be a fence about each tree. Rub off buds that offer to break foorth near the Root or any place where you would not have them, (but ſtill leave ſome here and there on the ſide to ſtop the ſap from running too much in head)keep them clean of ſuckers & weeds by hawing in ſummer, & delving & looſening the mould about them ſpring and Autumne *i. e.* at the two equinoxi alls, and tread faſt again, as fearing drought and winds.

Obſerving is what is ſaid, you may expect monamental, clean and well thriving trees,if right prun'd and well Incloſed.

The time of planting, see season for offsets Chap. 1. Sect. 4. neglect not your time of early planting, that is, as soon as they give over growing, and before the frosts come on, and you shall see them farr out-strip these set in the Spring, though have often planted in the Spring through necessity, but then I was allwayes something more than ordinary carefull to defend them from the ensuing droughts, by covering their bulks and watering, &c. Yet I preferre the Spring for Firr, and other such Greens, which therefore unavoidably requires the same care.

4. I shewed before how to prune in the nurserie while young. now continue, when planted out whilest they be small, prune every year, when a little older once in 2 years, then once in 3 or 4. and never seldomer than in 5 or 6.

And as you prune up the body, till the desired hight leave small branches here and there by the way, that it may bring greatness with its hight, and be by consequence the more able to stand; let never a Tree get a greater head than its Root is sufficiently able to nurse and bear; neither be Rash in loping them, except they be already top-heavy, which brings crookedness; if so, cut at a crooked place, slanting upwards, clean and smooth, and train up the streighteſt shoot again to be the Tree: or rather if you can save its head by thinning and croping the branches on that side which leans *i. e.* the underside, thus at midsummer, and slit the Bark in the Spring, so may it grow streight and taper. Purge still the head when needfull and prune superfluities, cut off all that Cross, Rubs, Frets, and Galls on another. Permit not Trees to Fork, train them with one streight and taper body, and a handsome round Pyramidall head. And when you prune, cut close and smooth by the body or bough with the Knife, or Chissell and Mell, or if the branch be great, cut with a saw (nicking it underneath first) and smooth it with the Chissell, so will it the better heal: but if the Tree be very old and the branches great, such will never be able to overgrow the wound, therefore if you must cut such, do at a little distance from the body, the wound declining the Horizon. Thus Train pines, Firrs, Pitch, and these of the Conicall Tribe in stories only (which

methode

methode they naturally follow,) you may cut out ſome of the greateſt branches of the under ſtorie, but ſo as you leave them regular or equally furniſhed round: ſo may you leave one ſtorie, cut out the ſecond, leave the thrid, &c. Cut not their tops, yet you may crop ſome of their ſide-boughes if the Tree be top-heavy, and afterwards as the Tree gets footing, cut theſe clean off.

There be two ſeaſons for pruning ſuch as loſe the leaf: the firſt for theſe of little pith is *October* and *November*, or any time in Winter: and for them of ſoft wood and great hearts, and for Greens let the froſts be over, and before the ſap in them riſe, except Firrs and other Roſinious Trees in *November*, becauſe if prun'd in *March* they bleed, and in *September* and *October* they have not given over growing.

The ſecond time is midſummer, which is ordinarly about the end of *June*: this is a ſafe time to prun them of great pith and any that is unapt to bleed; but eſpecially for cutting of young ſhoots of this year: extripate all ſuch buds and ſhoots as you deſire not to grow, and hereby you may make clean bodied Trees, albeit never ſo apt to break out in Side-boughes, as ſome Elms are. for the diſeaſes of all Trees with their cures, ſee Chap. 5. Sect. 8. and 9.

CHAP. IV.

Of Hedges, or Incloſures.

1. AS there is no Countrey can have more need of planting than this, ſo non more needfull of Incloſing: for we well know how vain it is to plant unleſs we Incloſe.

I ſpoke of Brick and Stone Walls, in Part 1. Chap. 5. Sect. 5. Now for Hedges I preferre the Holly and Hauthorn, raiſed from the ſeed, albeit there be ſeveral others. mix not Hedges, becauſe ſtrong-

ſtrong-growers over-growes the weak, neither ſuffer Briers, Brambles, Docks, or Thiſſels therein.

2. Your *hollies* having ſtood two years in the ſeminary and two in the nurſerie, remove them by a trowall or a ſpade with a clod of Earth at their Roots, croping ſuch Roots as appears Without the clod with a ſharp Knife, and leſſen its head by croping the ſide-boughes, (cut not its top) plant in made up bordures, or at the back of Ditches at a foot diſtance in good earth. Let them ſtand two years untouched except weeded, then cut their tops at a *bud* to make them furniſh thick, and ply their ſide boughes to grow through other, like ſlicing or feathering, and next year fall to work with the Sheers, cutting both ſides and top as we uſe to do with Box, &c. Never ſupporting or binding any Hedg, as is the Cuſtome of ſome: plant your *hollies* in *Aprile*, and when ready for ſheers, cut in *May* and *July* therewith, and ſo train them cloſe from the bottom, but neither too broad nor too high.

3. The *hawthorn* having ſtood 2 or 3 years in the ſeminary, pull them up and cut the ends of their Roots, and their tops within 4 Inches of the Root, and plant them within the fence or back of the ditches in the good earth, delve them in ſpading by ſpading all alongſt two rowes, a foot diſtance, ſtanding in equilateral Triangles, ſtill thickning your bordure by adding good Earth &c. Let them ſtand 3 years untouched, except weeding and reparing where any is dead; then fill them within half a foot of the ground, ſo will they ſhoot furth a thicket of young ſhoots, which next year may be train'd with the ſheers, as before is inſtructed.

4. If you would Plant your hedge on the face of a ditch, as in wet and tough grounds, then ſtreatch a line at both ſides of the intended ditch, and ritt with the ſpade alongſt by the ſame, ſlanting inward: for if the ditch be 7 quarters wide, it muſt be 5 deep, (ſloping to a foot in breadth at the bottom) then cut the turf or ſurface of your ditch, and lay a gang or row of the firſt ſpading alongſt by the brink of the ditch (ſloping at the face according to the ſlop determin'd, with half a foot of table intercepting, becauſe ſo much

much will crumble doun by the frosts, &c.) On the top of that, lay one row of quicks, their tops standing up a little towards the ditch, cover their Roots with fine small earth, and lay another spading above them, and if you will lay another row of quicks above that, every one here opposing the mid-intervall of the other, and so cover on the rest of the mould till the ditch be finished: being allwayes sure to put good earth next the quicks, thô you should bring it from some high-way or ridg of land next thereunto, and every year scour the ditches, claping it up about the quicks. or a farr better way is,

To cast half of the Earth that comes out of the ditches, to each hand, and quicks in both sides; accordingly this will make an *Invincible fence*: for then the hedg growes up on both sides of the ditch, the gutter betwixt makes it terrible. but that I am against the common double, (which is 2 ditches near other, and the Earth that comes out of both laid betwixt them, with a row of quicks in the face of each ditch,) is becaus here the quicks are obnoxious to the croping of cattle; (besides they take much ground and the quicks are too much burthened with Earth,) rather if you be for such, make a little space betwixt of plain ground, where you may plant the Hedg.

5. But if you would have a row of Trees round by your ditches, then make these two ditches the breadth of a walk sundrie, but parallel, and in that mid intervall plant one single row of Trees, and the two hedges at the Back of the ditches: here you have two excellent walks of shade, nor is the ground lost between thir hedges; you may have good Hay, and in large quantity. And in effect this is the best way that ever I thought upon, for Incloſing and sheltering our grounds and plantations; and you may make the Intervall betwixt these hedges wider, so as you may have two rowes of Trees.

6. Now for fencing the quicks in all the several sorts from the croping of beast, as indispensibly necessary while young.

If the Hedg be planted alonght by the back or inſide of the Ditch, then the ſtreng Ditch with its Earth caſten to both ſides will ſence it: and if you think that not ſufficient, ſet, ſtake, and raiſe Hedg on the top of the bank, or rather (which is indeed much better,) cuttings of Thorns ſet there in a ſpade bit trench well backed: or for want of theſe, back up the Ditch with Turf, which is like half Ditching. But all this time there is but one ſide of them fenced, and that next the paſture; therefore no beaſts can come on the other ſide to eat the Fogage, except teathered horſes: but if you make the hedg or Hedges and Trees betwixt the two Ditches (you may caſt half of their Earth to each hand, and back them as is Said, which fences from all hands moſt elegantly. And if you plant your Hedges in the face of the Ditches, the ſame backing on each hand will alſo fence them.

But where you plant Trees at a great diſtance through your fields or parks, you may fence every particular Tree by cutting a little trench round 4 foot off the Tree, and about 2 foot wide, facing it handſomly up like a ditch, laying one row of Turfs or ſpadings above other, till it be 3 foot high from the ſurface, backing them with the ſmall Earth or ſhovellings, battering inward to the Tree; here the Tree muſt be high planted: tho more the Soyl inclyn to wet, or the ſourer that be, plant ſo much the higher above the ſurface; you may ſtick ſome Briers, or Thorns on the top of this Tump.

CHAP.

CHAP. V.

How to propagate, and order Fruit-trees.

1. THE only Fruits for this Countrey are Aples, Pears, Cherries, Plumes, (and Apricocks, and peaches at South-side of walls,) Currans, Goosberries, Rasberries, &c.

Before I begin, *I shall* premise some observations on Graffing, &c. a sure means to obtain Fruits of the desired species, and that in short time: for by taking the twig or bud of such a sort as is a good fruit, and bears well, and Graff or Inoculate into a proper stock, *you ar sure to* have the same fruit; because the Graff dominires, albeit it may have a little smack of its stock whereon now Graffed. And you may expect fruit, because it may actually have the fruit buds, as being taken from a bearing tree. But if you sow the seed, they will be long e're they come to bear, and at length perhaps bring no fine fruit, and for the seed of Graffed Trees, they will not bring the same fruit; Pears, and Aples will rather bring a Fruit of the nature of the stock, whereupon they have been graffed; and although you should take a Cyon of the same, and graff in its self, that will not alter the Fruit, nor better the Tree, except a little check its aspiring, which may as well be effected by pruning.

Wee can also be sure of the desired fruit, by cuttings, layings, and circumposition; but such are allwayes Dwarfish and short lived Trees, as wanting a main Root which all seedlings have. Hence ariseth one reason, why stocks should be raised from the seed. Suckers are not so clean and lustie; therefore not so able to nurse the graffs, and they are apt to send Suckers again. Only I look upon plum Suckers as very good, because when they Spring off a Root at a distance from the stem, they strick good Root of themselves, very much resembling seedlings. Moreover you may

graff on a Root or a ſtock Sprung off that Root as in Chap. 1. Sect. 4. & 8. which is near equal to a ſeedling.

The ſeed of crabs, or wild Aples, and pears, may be fit to make ſtocks of ſuch Trees deſigned for the fields, or more Rugged grounds; but for a cultivated ſoil I would choice the ſeeds of finer fruits. And ſo the great White-plum is the beſt ſtocks for Apricocks, or for want thereof any other White-plum with great ſhoots, albeit it doth on any plum: but we reject it ſelf for a ſtock, as being too ſpongie and not ſo durable. But Peaches and nectarins, takes only beſt upon Peach ſtocks, ſo cherries on geens, and Plumes upon plumes.

Goosberries, and currans, needs not graffing; they do well by Suckers, layers, and cuttings.

To make Dwarfe Aples, Graff or bud on the paradiſe or any that hath Burry-knots, Codlings, Redſtracks, &c. Dwarfe Pears on the Quince: but no Pear holds well on it (that I have tryed,) ſave Red Pear Achans and longavil; but you may re-graff for varieties. And if you be very curious for theſe ſtocks (which I am not) you may cut them at the Spring, when ready for graffing, within 2 Inches of the ground, and at *Auguſt* come twelve moneths Inoculate in that young ſhoot, and perhaps they will proſper the better. but I think graffing in the Roots of Pears, will produce Dwarfs.

Dwarfe-cherries on the morella, or on the common Red cherrie. Or on that Red geen ſpoken of in Chap. 3. Sect. 2. which is more Dwarffiſh than the black.

2. The mellow, warme and light ground is for fruits; and allthough the beſt, warmeſt and lighteſt land, yields moſt excellent corn, yet the ſtrong, ſtiff, cold, moiſt yields not ſo good fruits, plants, Graſs, Hay, &c. Aples affect a pretty rich loamy ſoil, tho they will bear in clay mixt with lym, dung, and Turff.

Pears will proſper well enough where the ſoil is mixt with Gravel. But both Aples and Pears are better reliſhed in warme grounds that are not over moiſt, than in cold and wet: yet there be ſome grounds hath ſweet moiſture, others ſoure; Which laſt is very bad, and

and therefore must be helped by draining and application of proper Medicine, see Chap 2.

Cherries, Plumes, Apricocks, Peaches affect a light, sharp soil throughly prepared and mixed with Rotted manures. As to their propagation,

By Graffing are Apples, Pears, Cherries, Plumes, Quince, Medlar, Wallnut, Chesnut, Filbeard, Service, &c.

By Inoculation or budding ar Apricocks, Peaches, Nectarines, Almond, Goosberries, Currans, Apples, Pears, Plumes, Wallnuts, &c.

By Suckers, are Currans, Goosberries, Barrberries, Rasberries, Quince, Vine, Fig, Mulberrie; its the white that feeds the Silk-worme: But that's to little purpose here.

By layers and circumposition are all sorts.

By cuttings are Currans, Goosberries, Vine, Quince, Apples, especially these with Burrie-knots.

By Nuts and Stones are Wallnuts, Chesnuts, Filbeards, Almond, Peach, Plum, Cherrie.

By Kirnells or seeds are Apples, Pears, Quince, Goosberries, Currans, Barberries, Vine, Mulberrie, &c.

I have told whereupon to Graff Apples, Pears, Cherries, Plumes, Apricocks, Peaches; and as for the Quince you may Graff it on it self or on the Hawthorn, Almonds on it self, Medlars on Pears, or on the Service. Filbeards on the Hassell; Service, Wallnut, Chesnut, Goosberrie, Curran, all on their own Kind.

3. In raising the stocks observe that,

Aple, and Pear seed, must be separate from the Fleshy substance and spread to dry a little especially the Cyder-marie, lest it heat; you may roll it in Sand to help the separation: keep it in a couch of dry Sand till Winter pass, then sow them as soon as the frosts are over; they come up that season.

For raising Cherries or Greens see Chap. 3. Sect. 2. Peach, Plum, and Almond-stones must be used in all cases as Cherries, only you may break the Peach Stones.

Uſe the Quince-ſeed as Aples. As for the reſt, I have ſhewed how they are increaſed in the laſt Section, and how to performe the ſeveral wayes in Chap. 1.

But you muſt prepare a ſeminary and nurſerie, as before for Forreſt-trees, ſee Chap. 3. Sect. 1. ſow every ſpecies by themſelves, keep them clean of weeds, and the next or ſecond year after the ſeeds riſe, if they ſhoot luſtily, (draw out the biggeſt firſt) tranſplant them into the nurſerie in ſingle rowes 2 foot intervall, and half a foot in the rowes, for conveniency in hawing, graffing, pruning, &c. and obſerve to prun Root and ſide-branches in planting, as I directed with Forreſt-trees; only when you have got them to a convenient hight for graffing, you may cut their tops to make their bodies ſwell the ſooner, albeit this be not permitted with Forreſt-trees. However graff and inoculat, while the ſtocks are young, e're they be an Inch Diameter, and they will ſooner heal the wound: let them have a years ſettlement in the nurſerie before you graff; but you may inoculat that ſame inſuing ſummer after planting, eſpecially if they be very free and luſtie. Next year after graffed, remove them to a wider diſtance, *viz.* 3 foot one way and a foot the other. Prun there Roots at every removal, and enter a pruning, that they may provide for a well ſhapen head, cut them near now while young, if you would have all their branches of an equal greatneſs, and of order proper, as anon I ſhall inform you.

In ſetting your ſtocks in the nurſerie, I preſume you will ſet every kind by themſelves *i. e.* Pears with Pears, and Aples with Aples, &c. And when you graff or bud, write down in your nurſerie-book their ſpecies as they ſtand, *viz.* begin at the end of ſuch a nurſerie, and ſay the firſt row is graffed, with ſuch a ſort and ſo furth: and if you have more than one in a row, then ſet in a ſtake betwixt each ſpecies, and ſo write thus, from ſuch an end of ſuch a row; to the firſt ſtake is ſo many of ſuch a ſort or ſpecies; thence to the ſecond ſtake ſo many of another, &c.

4. When you tranſplant Fruit-Trees into orchards, do, as I directed with Forreſt-trees in groves; plant not deep, neither trench

trench too deep; but tempt the roots by baiting the ſurface with dungs to make them run ebb within the reach of the Sun and ſhoures. Therefore mix the Earth in the holes (which ſhould be 6 or 8 foot diameter) with Rotted neats dung and Earth well turned, ſweetned and Prepared as in Chap. 2. Cover, delve, and haw their bulks as in Chap. 3. Sect. 3. and for further improving and keeping your Fruit-trees in good caſe, ſee Sect. 6. of this Chapter, prune their Roots at every removal, as Forreſt-trees, (experience forbids me to make exception of the Peach or any other, as ſome doth) And proportion their heads to their Roots by pruning: but here note, that, as Forreſt-trees are train'd up high bodies and unlopt heads, ſo Fruit-trees with low bodies, their heads lopt and branches topt; therefore eaſily proportion'd, as aforeſaid.

Standards of 4 years old, may be planted out of nurſeries into Orchards, Wall-trees of 2 years old.

The ſeaſon of the year is as ſoon as they give over growing; (if the leaves be not off, cut them, ſaving a little tail of their ſtalks) its true you may plant any time in Winter, weather open, but rather let the froſts be over, and the ſpring Approaching, if you have miſſed the fore-end of Winter, which is the better ſeaſon.

For ſtandards are Aples, Pears, Cherries, Plumes, Gooſberries, Currans, Barberries, Quince, Wallnut, Cheſnut, Filbeards, Service: But I think all theſe deſerves not a place in the orchard.

For Walls are Apricocks, Peaches, Nectarines, Almond, Vine, Fig, Currans, Aples, Pears, Cherries, Plumes, &c. But you need not take up much with Almond, Vine, Fig, nor Nectarine.

On the ſouth ſide of the Wall plant Apricocks, Peaches, Nectarines, Vine, &c. On the eaſt and weſt ſides Cherries, Plumes, Aples, Pears, &c. On the north ſide Plumes, ſome Pears, as great Bargamot, ſome Aples, Currans eſpecially, and Raſps, &c.

When you elect them in the nurſerie, hang ſticks tyed at them

figured,

figured, and write the ſame figure on the Paper at their name to diſtinguiſh their ſpecies; and afterwards being planted write them, as they ſtand.

5. Begin betimes to prune your Fruit-trees, ſpare them not while young: reduce them into a good ſhape, and order while ſuch; ſo will they not only Soon over-grow the wounds, their branches being but ſmall, but alſo when they ſhould come to bear fruit, you ſhall not need to cut ſo much, only purge them of ſuperfluities; and this is the way to make Trees *Fruitful* as well as pleaſant.

Some Ignorants are againſt pruning, ſuffering their Trees to run and Ramble to ſuch a head of confuſion, as neither bears well nor fair: for the Root is not able to maintain ſuch, farr leſs fruit too; and therefore are their fruit ſo ſmall and Imperfect; in the mean time the Tree ſpends its ſtrength, and ſo cannot live long, nor make good ſervice in their time: yea ſomtimes the Root is not ſo much as able to bear ſuch monſtrous heads; I know one windy day proſtrate above half a ſcore ſuch in a little orchard.

Others again that are for pruning uſually runs on the other extream, by cutting too much, and untimely; and ſome ſparing what they ſhould cut, and cutting ſuch as they ought to ſpare: but the general errour even amongſt the learned is, that they ſpare them While they ſhould prune, *viz:* the very firſt and ſecond year in ſpecial, yea the firſt 5 or 6 years; and then they fall a maſſackering: at which time the branches being growen ſome of them greater than other, who now runs away with all the nouriſhment from the ſmaller; inſomuch that no man can reduce them to order again, having thus neglected the time. Albeit you ſhould endevour it by cutting deep, or exterminating theſe great branches, which I confeſs is the next remeed; but then as theſe wounds brings cankers, hollowneſs, &c. So doth the work retard their bearing fruit. And indeed its about the time that Trees ordinarly begin to bear fruit, that theſe unskilful men

men begin to prune: and the more they are thus cut in the head, the more they ſpring out to wood, and the leſs fruit they bear. But experience has taught me to begin, While young.

And when you do begin conſider on the hight of the body, (for as high Trees are unprofitable, ſo too low Trees in orchards are inconvenient) for Aple and Pear ſtandards two or three foot, plume and cherrie 3 or 4 foot, Dwarff and Wall-trees half a foot; there cut the top that Runs Straight upwards, making it to ſpread out in branches round. ſuffer no branch to aſpire beyond other in hight, nor any to croſs, Rub, or gall one another; and whatever branch or twig you cut off, cut cloſe and clean by the body or branch (except in the caſe of old Trees and great branches as I obſerved in pruning Forreſt-trees) and in toping of branches cut cloſe and ſmooth Immediatly above a leaf bud, ſlanting upwards. And when you prun, ſpare the fruit buds (the full ones are them) except you ſee them too many; then purge by the Knife. likwayes if afterwards you find more fruit knotted than the Tree can be able to nurſe to perfection, thin them in time.

But your firſt work is to proportion the head to the Root, by pruning; cut the tops at a convenient hight, that the Tree may grow equally furniſhed round; for cutting as it diminiſheth, ſo it forms and ſhapes the head, inſomuch as it furniſheth with new young ſhoots, that may be train'd, as you pleaſe.

Standards ſhould have but four Arms breaking out for a head, opening equally round, theſe divided into branches, and again ſubdividing into twigs. & that you may the better underſtand what to cut, you may ſtand under, go about, look up through the tree where you may eſpy ſuperfluities: keep them clear, void, open within like a bell and level on the the top. make ſome larger opens towards the the ſouth for Sun-beams entrance; let no branch grow croſs through the heart nor ſhoot ſpring up therein; (minding alwayes to prun ſuch as croſs, Rubs and galls other as above is noted) & any branches, ſhoots, or twigs that grows not the way you would have them, cut them at the place whence you think they will ſend furth ſhoots

which may lead the way you desire them: cut close, smooth, and slanting at the back of a leaf bud tending that way; by this I bring Trees to order.

Wall-Trees especially should be cut near, while young, that they may send furth a thicket of small shoots for furnishing your walls from the bottom, equally: and if you continue to top them every year at a convenient hight (perhaps about half a foot above the last) that will make them shoot all their branches of an equal uniformity of greatness, hight, and thickness, so that no long, bair or naked branch be seen there, neither one or two great and all the rest starved small; the common fault of our wall Trees, and is occasioned through neglecting to cut while young even the first year, as is said above.

But albeit a Tree right begun and so going on, yet one years neglect or wrong pruning may spoil it: for as I was once pruning wall Trees, an Ingenious person standing by, said I cut them too low, alleadging thereby, the wall should be long uncovered, desiring me to cut them a little higher: I told him, that was wrong, but for to satisfie him I did cut 2 of them about 8 or 9 Inches higher than I designed or should have don. The next year these two Trees left about a foot naked round, and above the same crown'd like nests while the rest was equally and orderly furnished; when he beheld this, his minde was changed, and I obleidged to cut exactly where I should have don the precedent year: which was now a little below the midle of the naked place, and this did put them several years behind the rest of bearing fruit.

You may nail them at midsummer that year of planting, and so continue to do at the seasons herafter discribed: prepare double plancher-nails and tags of hats, (which is better than leather) shape the tags about half Inch broad, and betwixt 3, 4, and 5 Inches long, making a gash with the Knife near the ends by folding, to put through the nail; then spread the Tree, laying, plying, & nailing every individual branch by it self, all at equal distances from other, not close in one place and wide in another, and

and let non croſs other, the ſuperfluous and theſe that will not ply eaſily, and the exuberant or luſtie that Robs the reſt, muſt be cut away.

Well plyed Trees will appear like apricocks; train, ſpread, except theſe on a low wall, which you may cauſe lean all one way, as half of the other: drive the nail but half way in, and on the upperſide of the branch, elſe it will lean and gall; at every nailing alter the old nails and beware of pinching tags, &c.

The time for pruning old planted and hardie Trees, is any time betwixt the leaf falling and the Spring, but let the froſts be over before you prune the new planted young and tender, and before the ſap riſe, otherwayes the froſts will penetrate the wounds and make a ſore: but if you muſt cut before the froſts, becauſe their heads may be obnoxious to the winds, (ſuch are ordinarly the new planted ſtandards) then yow may cut a little, and at Spring cut off theſe pieces left cleanly, as before is noted. Alſo let the froſts be over before you prune your Wall-trees and before they bud; only I uſe to let peaches bud furth a little e're I prune them, otherwayes pieces of their branches ſomtimes periſh after the Knife.

And beſides, that you muſt Rub off all unneceſſary buds, and pull up ſuckers and weeds from the Roots, you muſt alſo give all your Trees a midſummer pruning, (which is ordinarly the end of *June* & beginning of *July*) a good time to cut any ſhoots of this year; any ſhoots or buds as tend not only to the deforming your Trees, but Robs them of that ſap, which may be otherwayes ſpent in nurſing the Tree and its fruits, (but the ſpring is the time of croping or cutting their tops untill the wall be covered, then crop at both ſeaſons) thin & purge gently to let in the Sun, but not to ſcorch the fruit. this is alſo the time of furniſhing your Trees with pedaſtools or Bearers: therefore in repruning ſave as many of the likelyeſt ſhoots, as ar well placed, and cut them at the 3d or 4th bud from the Tree; but cut quit off the luſtieſt and greateſt of this years (which Ignorants do ſpare) & nail up ſuch as are for filling up the defects of the wall.

You may go through them in harveſt and purge the fruit of ſuperfluous leaves which hinders the Sun: but do it ſo, as there may be leaves ſufficient to ſcreen the fruit, and cut quit off the luſtie ſhoots of this ſecond Spring, that Robbs the Tree and fruit.

As for goosberrie and curran ſtandards, train them to a foot ſtem with a handſome round but thin head: theſe at Walls half a foot ſtem with a well ſpread head ſupported with Rodes layed croſs, faſtned with nails and tags. Raſps may be in ſhadowy bordures or beds a foot diſtance, kept clean of Suckers, weeds, and dead wood.

But becauſe ſome years in ſome places we have ripe Grapes, eſpecially that we have under the name of Frontinak: therefore if you think a Tree or two of them worth your while, plant them at a ſouth Wall in a pure and fine mould, *not* wet, ſour, and croud, but a light ſweet ſoil mixt with ſome Cowes dung Rotted in heaps with the mould. Plant ebb and trench not deep; prune them every year, prune low in *Februarie*, and at the true midſummer. Cut off the luſtie young ſhoots and tendralls with ſheers betwixt the 2d and 3d Joynt above the fruit; and in *Auguſt* purge it of ſuperfluous leaves, but reſerve ſo many as may ſcreen the fruit a little.

There be ſome ſorts of Fruit-Trees that will blow and bear themſelves to death, when young or midle aged: For ſuch cut moſt of the blowing buds, and thin the head to make it ſhoot again.

I got ſome cherries and other ſtone fruit from Holland, who tooke this decay: wherefore in the Spring I did cut off the blowing buds, and the branches near the place where the Tree headed, reſerving only ſome buds for receiving the ſap; (in caſe they ſhould have put furth at the midle of the body or a little above ground) this made them ſhoot to wood. Therefore I conclude that by this and delving about, you may help ill-thriving Trees.

There be alſo ſome Aples and Pears, that will be full of falſe bearing buds, that doth not blow; ſuch having got more head

the

the Roots can well maintain, consequently has not strength sufficient to spare sap for blossoms, farr less for fruit, which by pruning and thinning the head, and by slitting the bark of the body in the Spring, may be made afterwards to bear well, when they have put furth new shoots at the head.

Some Trees there be that will not bear of themselves till they be old: but if you cut off the head of the shoots as soon as ever the Spring shoot is over (which is at the true midsummer) and take out some great boughs then, if you minde your time, and do it with discretion, you may force that Tree to put furth blowing buds, and blow and bear the year following, as I shall informe you in next sect: but,

6. One main business is to inclose your plantations: avoid planting too deep, too dry, too cold, too moist, and guard your Orchards from winds by planting two rowes of Forrest-trees, at least round without the Wall, the breadth of a large walk therefrom with Thickets of the same on the West, North and East, but especially on the West. (Yet mind regularity) also observe my methode of planting, and pruning and ordering their bulks of 6 or 8 foot Diameter: but when the Tree growes old and their feeding Roots farr abroad, you cannot reach to feed them with dungs in this narrow Compass; therefore enlarg it, or otherwayes confine them a little sooner and hinder their too farr gauding, by digging a Circle round the Tree perhaps 8 foot Diameter, and cut all the Roots clean off there, that hath run out, applying fresh and sweet Mould, so shall they emitt Fibres or feeding Roots in thicket, which may be supplyed with refreshments once in two or three years, as shall be required. And this cutting the Roots will cause Trees, that are apt to spend more in wood than Fruit, alter there-from, (add this to the latter-end of the last Section) and the ends of the Roots cut off, and their buttends raised up a little, will serve as stocks to Graff upon.

When you would enrich your worne out plantations, if the ground be poor and dry, add well rotten dung prepared and mixt with soil. The Water that soaks from a Dung-hill is excellent: for it will

follow the Roots and Enrich the Trees. If the ground be cold and moiſt, add Pigeons dung or Aſhes and ſoot; which is alſo excellent if it be leopared with unskilfull dunging, or by noyſome weeds that grows about ſuch Roots, (where the owner is a ſluggard) & hatches or neſts, moles, mice, toads, &c.

If you obſerve the premiſes, you may prevent their diſeaſes, ſuch as illthriving, &c. But if you have, or do neglect, and the diſeaſes be come, as if Cankers or Galls be entered, cut them clean out, covering the wound with a Plaiſter of Cowes dung and clay compound; if the bark be pilled by hares, conies or mice, apply a *Plaiſter of the* ſame; (but better prevent the laſt three, by ſwadling the Trees with Straw or Hay ropes, unlooſed in ſummer and renewed every Winter, if your fence cannot Guard them.) Illtaken off branches, broken or rotten branches muſt be cut off clean and ſmooth. If any Trees be bark-bound, (which is the miſery of many and eſpecially Forreſt-trees) ſlit them in the Spring through the bark on both ſides with a ſharp Knife from the head to the Root, and delve about them, otherwayes raiſe and plant ebber if too deep; which is the common cauſe of this diſeaſe together with bad incloſure.

If Jaundiſe, cut off the diſeaſed wood; if moſs, ſcrape or ſinge it off: but its vain to attempt the cure untill you firſt remove the cauſe; which you will find to proceed from ſome malignity at the Roots, whither the diſeaſe be Bark-binding, Cankers, &c.

And this moſt commonly by ill-planting, (and not incloſing) as among Clay, Water, impenitrable Gravel, &c. *Water muſt be* draineds, it an intollerable evil. Cold clayes, ſtiff and hard ſoil muſt be trenched and mixed with dungs and ſoils, often ſtirred and fallowed, as above is directed. And if you would have Trees to proſper, obſerve their nature, and wherein they moſt delight; and ſo apply and help them accordingly.

9. And for deſtroying of vermine, there is traps for Moles of ſeveral forms, beſides you may watch and delve them up with the ſpade. And for mice, the traps from *Holland*, or for want thereof, Pots ſunk in the Earth (where they haunt) till their mouth be level with

with the surface half full of Water covered with a little chaff wherein they drown themselves; and so doth Toads, Asps, &c. Cast away the Earth where the ants lodge, supplying its place with stiff clay. Place Cow-hooves for the woodlice, and erwigs to lodg in all night, and so scald them early morning. Pour scalding Water in the nests of Wasps, and hang Glasses of Ail mingled with Hony, where you would not have them frequent.

Dash Water on the Trees for Caterpillers, by the Stroups we get from *Holland*. Gather Snails and Wormes, shoot Crows, Pyes, Jayes, and spread Nets before your Wall-Fruit for their preservation.

See the Appendix how to gather and preserve Fruit, and how to make Cyder, &c.

CHAP. VI.

Of Fruits, Herbes, and Roots for the Kitchen.

1. ALL the Fruits whereof I spoke in the last Chapter, are for the Kitchen or Table, but they grow on Trees or Shrubs; yet there is some falls in here, the tendereſt whereof are

Melons, and are not worth the while: for you must raise them on the early Hot-bed (the making whereof is in Chap. 2. Sect. 7.) which (when fit for seed) prick 4 or 5 in together, at 3 Inches distance, through the bed, setting drinking Glasses on them at first, and cover on the matts over the whole carefully, to preserve from Snow, Rains, and Winds; taking off the matts in temperate dayes, but keep on the Glasses, except in a warme space; that you acquaint them a little with the Air, by raising the edg of the Glasses, with a little Straw on the laun side, closing it at night again. When they stand in need, Water with Water made warme by standing an day

day or two in the Sun, impregnate with pigeons dung, but let it be fresh and clean, conveying it to the Roots, not touching their leaves with it: if they be sowen on the last discribed hotbed *viz.* in cases, sow at a wider distance, and you need not transplant, but renew the heat when needful, and as they grow larger, cover with the Bell-Glasses, giving them Air by hoising the Glasses, till they can endure the Sun without them, but still cover all close at night again: when they have put out runners 4 or 5 Inches long, cut off one or two joynts at the end, and when they have gathered more strength, cut off all but the prime shoots. And when the Fruit knots, nip off that runner above the Fruit between the 2d and 3d joynt, cutting still off the new ones that spring, but do not expose the Fruit to the Sun: lay tile under the Fruit: wipe the Dew off the Glasses and plants every morning, but keep the Glasses on the Fruit, and Water non now.

Cucumbers may be ordered that same very way, and so may Pompions, but they are not so tender, I have raised them without Glasses.

Strawberries are a very fine and delicat Fruit, and are easily increased, but best by the small Plants at the strings when taken Root at the joynts: plant them at any or both springs, but I find most of fibrous Rooted plants apt to be spued out of ground by Winter, if not Rooted sufficiently before. Dung, delve, mix and prepare a light and warme soil, prun their Root and top, and plant in streight lines 5 rowes in the bed, and suffer them never to over-run, but keep each stock by themselves, still taking off all their strings, (except at sometime you permit a few for increass) weed and haw among them; and in *September* cut them within 2 Inches of the ground, and lay Cow dung over the bed (reserving their tops free) covered with a strinkling of Sand; this will much improve them. So as they will not need renewing for 6 or 7 years.

Artichoks is a fine and lasting Fruit, and is increased by offsets chiefly, planted in the spring, a fat and well cultured soil, light and warme, enriched with Sheeps dung, plant in straight lines, about 3 foot distance having prun'd their Roots, and cut their tops within half

half a foot; Water (if needfull) with qualified Water, and ſtill cut away their under and hanging leaves, and haw the weeds as they begin to peep: when their Fruit is ſpent, cut them within half a foot of the ground, and delve and cover the plot over with dung and leitter, keeping their tops free. and in *Aprile* delve down the ſame, and extirpate them of Suckers, ſliping them off carefully leaving 2 or 3 at moſt to each ſtock for bearing; And they will flouriſh near 9 or 10 years.

Great beans muſt be planted early in the Spring, as ſoon as the great froſts or over, in deep rich ground, 2 foot Intervall and half a foot in their rows; theſe for ſeed when full ripe, cut and bind in little ſheaves and lay on Trees to dry

Kidnes in *Aprile*, a light and warme ſoil, ſupport them with ſticks.

Peas that you would have early, ſow in the full moon of *Novem*: if a warme place: but do not truſt too much unto them. Sow in *Feb.* and hence monthly till *June*, that you may have them till the froſts ſurprize: in an open light, warme, dry ſoil; and if they ly on the bair ground, they will ſooner ripe by reflection. but if you would have them fruitful, ſet ſticks amongſt them while young, for their tenderals to climb on; and keep them allwayes clean of weeds: when ripe, you may eaſily win ſome for ſeed, and ſow not every year on the ſame plot; to change the ground, Improves them. I preferre the ſetting them by lines, 5 rowes in the bed, as part 1. Chap: 5. Sect: 2. make the holes nimbly by the lines with a dible $1\frac{1}{2}$ Inch deep, and 2 Inches diſtance from another, or the ſame hand, fallowing, and put one in each hole; then give the bed a ſmooth with the rake head, which fills the holes and covers the peas: one pound makes more ſervice thus, than 3 otherwayes; its ſoon performed, and they ſpring orderly.

2. Of Sallads and pot-herbes, the choiceſt ſallad is Aſparagus: ſow its ſeed in *March*, good ground, and that time tewelv moneths tranſplant into an exceeding rich and well mixed ground of Rotted dung and light Earth. you may ſtreatch lines alongſt

and croſs the beds and mark with the edg of the rule; then gather little huts of Earth at the croſſings, whereon you muſt ſpread the Roots of your Aſparagus, two or three on a hut, but do not top their Roots, (you may perceive their poynts are like the runners of liquoriſh) then cover the ſets with the Rotted dung and Earth, 2 Inches over, which has been lying a year in compoſe. They cannot abide wet grounds, and weeds will quyt deſtroy them: at the Approach of winter, cut their ſtalks, and cover their beds with leitter and dung from the ſtables. The winter Raines will waſh in its ſubſtance to their Roots; at *Spring* e're they peep, remove it, and looſen the Earth amongſt them with a fork, and cover them near half Inch with the mould Raked and evened; but do not tread on them. Follow this direction yearly, and in 4 or 5 years it will be excellent for cutting: cut the biggeſt and tendereſt, and a little within the ground, but hurt not them ready to peep; the ſeed is ripe when red.

You may have early *Aſparagus*, if you plant ſome ſtrong Roots on your early hotbed; which about a moneth hence will Spring, and then dy.

Purſlain may be ſowen on the early hotbed, it cannot endure deep Interring: ſow on a fine mould like duſt, and only clap it a little with the ſhovell; hence on the cold bed, but fat and fine ſoil through the ſummer, in drills for convenience of weeding and cutting: and if you pleaſe tranſplant it when 2 Inches long, reſerve the early ſowen for ſeed, till their pods grow blackiſh; then pull and hang to dry, and Rub out.

As purſlain, ſo lettice by ſeeds only, at the ſame ſeaſons; (but the winter with corn ſallad in *Auguſt*) they love a fat ſoil ſomething moiſt, that for winter, more dry. Suffer theſe for ſeed to run up, and only cleanſe of under and withered leaves: It's ripe when it begins to fly with the wind; pull it, and lay on a clothe, to perfect, and Rub out in a dry day.

Sow creſſes at the ſame times. And plant
Tarragon by off-ſets in the Spring.

The

The ſmall cherault by ſeed, as creſſes. As alſo
Burnet: but it continues many years, ſtill yielding ſeed.
Sampier growes at ſeaſide in *Gallaway*, not ſo well in our gardens.

Succory and Endive by ſeeds and offſets at both ſprings; they continue many years.

Sorrall by offſets (ſome by ſeeds alſo) in beginning of *Aprile*, a good fat ſoil, a little ſhade, 6 or 7 rowes in the bed, weeded all ſummer, and cut near the ground in *Septemb*: In 2 or 3 years replant into another place: for they ſoon Impair the ground of that part appropriate for them.

Spinage by ſeed only in *Feb*: and *March*, but that ſowen beginning *Auguſt* is moſt profitable; cut it beginning *Oct*: and it will Spring a freſh. And be ready for Spring ſtoves; then reſerve ſome uncut for ſeed; it proſpers well in a very fat Earth, Not too dry.

And ſo doth beets, who are alſo propagate the ſame way, only them ſowen at Spring are moſt ſerviceable.

Sow beet card in the fatteſt, and when ſomething ſtrong, you may tranſplant: they ſeed the next, not that year wherein you ſow them.

Order burrage as ſpinage, its alſo Annuall; So bugloſs: but it continues many years.

Marigold may be ordered as burrage, and white Arage as Spinage.

Parſly by ſeeds in *Feb*: and *March*, they bring furth their ſeeds next year, whereby they muſt be yearly renewed.

Sellery in a light fat ſoil, 8 rowes in the bed, as parſly; it continues long, yearly yielding ſeed after the firſt; & ſo doth ſmalladg & Alexander. They may be blanched as ſuccory and Endive, *viz.* ſellery ſowen at ſpring Tranſplante at midſummer in a very fat and fine earth, half foot deep furrowes, 3 foot between the rowes, and but 3 Inches in the rowes, and as it growes up, gather the earth at its ſides from the Intervalls, leaving the top free; and ſtill as it growes, earth it up: ſo ſhall it be blanched for a winter ſallad.

Garleeks and ſhallot by offſets in *March*, a light and fat ſoil, 8 rowes in the bed: I uſe neither cutting nor twiſting their ſtakes, but when their fibres begin to Rott latter end *Auguſt*, take them up. and ſpread to dry a little, and houſe them in a dry room with board floor for uſe.

Leeks by ſeed in *April*, a fat ſoil, though ſomething ſtiff, In *June* you may thin them by Tranſplantation: prun their Roots and tops, ſet them at three Inches diſtance, and continue to crop them till *Octob*: the french ſeed is beſt, ours not worth the while.

Onyons by ſeeds in *March*, a Rich, Warme, light mould, well mixt with Rotted compoſt, and ſifted pigeons dung; give them a thin coat or covering of earth. Sow alſo beginning *July* for *Shibols*; its not worth the pains to win their ſeed.

Plant offſets of ſives in ſpring, 9 rowes in the bed, in a rich and low ground.

Cole Flower is a fine cole; ſow on the early hot bed, (for its hard to get winter plants through to purpoſe) ſow thin and ebb, and carefully preſerve them from colds while young. If you water, Imbibe pigeons dung, but touch not their leaves therewith; when their leaves ar 3 Inches broad, Tranſplant them into a very fat and well mixt ſoil, 2 foot diſtance, prun their Roots and tops: and if any worm knots, cut them a way, and in ſetting keep their hearts Immediatly above ground. And all along keep them clean of weeds, under hanging and withered leaves: let them not ſuffer drought while young, make the water like wort by dung. if the ground and ſeed be good, you may expect good heads; which if you ſpend not alltogether before froſts, (which ſpoils them) take them up in a dry day and ty them in pairs to hang in a dry Room for uſe. the beſt ſeed comes from *Candia*.

There be many Cabbages; ſow the *Savoy* and ſuch tender ſorts, as cole-flowers, albeit not ſo tender; ſow the great white and Red, the full moon in *July*, Plant them furth in *Octob*: 3 foot diſtance in well dunged ground: ſet ſome alſo in *March*; but then the gardner finds multiplicity of buſineſs, therefore its his wiſdom to put as much

much work by hand as can ſuffer it, at leaſt to have all his grounds fallowed before winter. you may take up and hang your Cabbages in *Novem:* as cole-flowers: but plant ſome of the beſt and hardeſt for ſeed, up to the neck; when they ſhoot, ſupport with ſtakes and Ropes; when full, cut and lay on a clothe to perfect. But choice the midle, rejecting the lower branches.

Catch ſnails and worms that graws the young ſprouting plants; and ſet nets for birds at the ſame time. the reaſon why old *Cole* is full of green worms is, dry poor ground never weeded, or otherwayes unqualified dungs and unſeaſonably applyed. If they would trench, mix, &c. As in Chap: 2. that their ground may be clean and ſweet, they ſhall ripen accordingly.

Common Colworts ar uſually ſowen at ſpring, planted in ſummer and eaten through winter, and at ſpring when other green herbes ar ſcarce you may alſo ſow and ſet them with Cabbages and ripe their ſeeds accordingly.

3. Of ſweet herbes: as,

Clary by ſeeds and offſets in *Aprile*; at which time you may ſlip and ſet Tanſie, Sage, Coſt, Mint, Balme, Winter Savory, Thyme, Penniroyall, Wild Marjorum, Maudlin, Fennell, *&c.* Prune their tops and fibres, and plant in a garden ſoil, 8 rowes in the bed; they all continue long: but cutting their tops in growing time makes them more durable: and cut them all within a handful of the ground at *Auguſt*, that they may recover againſt winter. You may likewayes ſow the ſeed of Fennell, Thyme, Winter as well as Summer Savory, Dill, Sweet Baſill, *&c.* In *Aprile*, a warme cultured ſoil, ordering them as above: the three laſt ar annualls. If you would have ſweet Marjorum early, raiſe it on the hot bed, the ſweet Baſill requires the ſame: ſow it alſo the latter end of *Aprile* in a warme fat ſoil, 8 rowes in the bed. you may ſow it in *July*, and Tranſplant when two Inches high, in a warme bordure at a ſouth wall; its ſeed with Baſill comes from hotter Countries. Sow Roſmary ſeed in *Aprile*, or at the ſame time take its ſlips or cuttings and twiſt them a little at the ends, and dible in

good ſoil, on a ſouth wall-bordure: but cut not their tops, they eaſily root being watered in drought with ſoap water; you may ply it to the wall as Shrubs.

4. I am now come to Roots, they require a light Earth, deep trenched, fat ſand mixt with Sheeps dung; its convenient that it be dunged a year before, becauſe new dung maks them forke.

Plant Liquoriſh offſets and Runners in *February*, in this ſoil well ſtirred and mixt, after which do not tread ſave in the furrows, ſix rowes in the bed, and cover all the Intervalls with leitter topt with ſand, but let the plants be free: for this is to keep out drought the firſt ſummer; keep them allwayes clean of weeds and cut their ſtalks near winter. let it ſtand 3 ſummers in the ground, and in *Novem:* take it up thus: begin at one ſide of the plot, and make a trench, the whole deepth of their Roots, taking it out carefully (not breaking it) at the face of the ſame, caſting the Earth ſtill behind as you proceed; then cut off the plants, to divide carefully and lay them amongſt moiſt ſand in a cellar till ſetting time. And becauſe it ſtands three ſeaſons you may have three ſeveral plantations; ſo ſhall you have it to take up yearly, if you plant accordingly.

Scorzonera by ſeeds and by offſets: (that is by parting the tops of the Root) ſow in the Spring, or when its ſeed ripes promiſcuouly in the beds; it continues many years in the ground, and growes ſtill the greater, and is in ſeaſon at all times for eating, tho it yearly run to ſeed.

Order Carvy as ſcorzonera; its Roots is eaten as parſneeps.

Skirrets by ſeeds, but chiefly by offſets, plant the ſmall ſets not many in a bundle, in *March*, 8 rowes in the bed: when their ſtalks begin to wither, fall a ſpending them, and as you break off their Roots for uſe, lay rheir tops or ſets in ground covered a little till the Spring for planting; (I cautioned you before to change the crops) theſe you ſpend not e're the froſts come, hard houſe among very dry ſand, that you may have them when

when you will, rather as be barred from them by the frosts.

Parsneeps by seed only: sow in *March* promiscuously over the bed, but thin; spend and house them with skirrets, and cut quit off their tops, lest they grow amongst the sand: reserve some of the best untaken up for seed, which will ripe the next season, choice the midle stem seed.

Beat-Rave may be ordered in all cases as parsneeps, save that you may begin sooner to eat them (*viz*: as soon as they are bigg enough) tho they last as long, besides these you pickle.

Carrots as beat Raves.

Turneeps by seeds in *Aprile*, *May*, *June*, *July*, (the first proves not best) promiscuously over the bed, very thin and scarcely any covering of Earth. When they rise, thin them; late turneeps may be housed as parsneeps and seeds reapt accordingly.

Horse Radish by offsets, and lasts long too.

The Garden Radish by seed only: you may raise for early in the hotbed cases; hence every 20 dayes with other sallading through summer, because they quickly shoot for seed: sow black Radish in *August* and *Septemb*: for winter, these seeds next season.

Potatoes being cut in as many pieces as you please providing there be an eye at each piece and planted in *March*, 5 rowes in the bed, plant not deep, neither in wet or stiff ground; spend them with parsneeps, and in housing spread only through a board-floor.

Parsly is also a Root for the Kitchen, and so is fennell; I spoke of them before, only you may house some for winter.

See part 1. Chap: 5. for the orderly planting of Kitchen herbes.

5. Weeding (I think) may be accompted the most material part of Gard'nery: The learned *Evelin* takes notice of it; his directions are, weed and haw betimes, continue weeding before they run to seed, which is of extraordinary Importance both for

for saving of charge, Improvement of fruit, and the neat maintaining of the gardens: wherefore sayes he, keep your weeds doun, that they grow not to seed, and begin your work of hawing as soon as they begin allmost to peep; by this means you will dispatch more in a few houres than afterwards in a whole day; whereas if you neglect it till they are ready to seed, you do but stir and repair the Earth for a more numerous crop, and your ground shall never be cleared.

And this agrees with what I had writen my self, *viz*: destroy weeds while young: for when they have growen strong and got deep Rooting, they'le not only take the nurishment from the good plant, but there will be such difficulty in grubing them out, that the good seed or plant is in danger of being destroyed; but if you suffer them to bear and sow their seeds, then (besides that they exhaust much more of the substance of the ground) you shall find the work Intollerable, for they'le poyson the whole ground, insomuch that one years seeds will cost many years weeding: and therefore prevent these things by keeping doun the weeds; so shall your work become easie and gardens handsome.

In beds where hawes cannot go, you must weed with your hands on both sides, sitting in the furrow on a straw cushion, pull up the Root cleanly, taking the help of the weeding Iron where needful: but make use of the haw in all the Intervalls, drill-beds, nurseries, furrowes, tables, or pathes, whereby one will cleanse more than some six by weeding with their hands; and if dry weather, they'le wither where they ly cut, otherwayes Rake them in heaps and spread again when Rotted, or carry them to some open trench or pit, and still be visiting your plantations, that as soon as you perceive a weed peep, you may chalk it.

CHAP.

CHAP. VII.

Of some Physick herbes, shrubs, and Flowers.

1. ALL the herbes in the last chapter are physical, and having spoken to them already, I have the less to do here; however there is more, as

Garden-Rue: I use to environe sage beds with Rue; (the soil not moist, mixt with ashes not cinders) you may box bordures with it as well as lavender, or hyssop; which last is also Increased by seed, and so is golden Rod, feverfew, verven, celandin; they last many years, and so doth

Wormwoods, comfry, Solomons seal, Catmint, Callamint, Elacampan, Masterwort, wall pellitory, garden Germander, Beatony, Camomile, Swallowort, Suthernwood, Lovag, Dwarfelder, harts-tongue, Maiden-hair, Asrum, Dropwort, Birthwort, Horhund, Spignell, Agrimony, Briony, Bearsbreach, Sea-holly, Madder, Rhuebarb, Dogmercury; all which are easily Increased by offsets in the Spring, and requires to be cut a little above ground at the beginning of Autumne.

Angelica, Spurg, scurvy grass, &c. Are Annualls, but yield seed the second year from sowing: you may sow when ripe, or in the Spring; but if you prevent their seeding by cutting, they will last longer.

Blessed thissell, Thorn Aple, Tobaco, stinking Arag, oak of Jerusalem, &c. Yielding seed and dying the first year; therefore sow yearly in *Aprile*. The Virginia Tobaco requires the hotbed, the rest a good fat, light soil, as doth Angelica: you must not burie stinking Arag deep, sow it as purslain.

There be many more, besides multitudes in the fields, Woods, Glens, Meadowes, &c. Of good use, many whereof you may bring into the garden as I have done: I forbear, seeing the order is in part 1.

Chap. 5. and the wayes of propagation in the first of this, and how to order the ground in the second. I do not approve of planting the clod with them brought out of the fields, for it rotts and turns sour, and so kills the plant, (albeit you may keep the clod about it till you come home but,) then part it off carefully, prun their fibres a little, make the holes with the Trowall, and plant in a Connatural Earth, to that of their wonted abode, well stirred and aired, which is ane excellent mean that makes all plants prosper, and therefore diligently to be observed.

2. Of Shrubs that lose their leaves in Winter, the choicest whereof are,

Roses of many sorts, they are increased by Suckers and layers the musk may be buded on the Eglantin and set at a Wall; the double Yellow bears faireſt Flowers, *if you* bud the single Yellow on a Frankfort, and rebud the double Yellow thereon, (I have done it immediatly on the single) planted as a Standard, a little shaded in Summer, and kept clean of Suckers and superfluous buds; and any that blow not freely may be slit at the 5 divisions of the hose.

Prune your Roses after the *Flower* is past, *viz.* before the full Moon in *October*, cut behind a leaf-bud and cleanse them of dead wood, and if you desire fair Flowers, suffer but one Stem on a Root and keep it low, and every 5th year, cut them down to the ground, renewing their earth with old Cow dung.

Jasmines, Honisuckles, Pipe-trees, &c. by suckers, layers and cuttings. See Chap. 1.

Mezerion by seed, as Hawthorn; they ly as long.

Of Shrubs that be ever green there is Box, Savin, Arbor vitæ, Tamerisk, Privite, &c. by suckers, layers, and cuttings in *Aprile*; a shade and moist fat soil till Rooted.

The Cherrie-bay is an excellent Green, and not very Apt to blast, there is also Lauruſtinus, Philyrea, Alaternus, (I love not Pyracantha,) Juniper, (I care not for ever green Oak and Cypress) all by seeds, which must be couched in Sand before Winter, and sowen in *Aprile*, to rise that season except the Juniper, which lyes till the

the next: transplant the second year after they rise in *Aprile*, remove by a Trowal, with Earth at their Roots, toping such Roots as appears without the clod, and lessen the head by thinning it. See where I have spoken of Holly, for the same Rules may be observed for these to be spread on Walls, but save the top of Standards: they do all well by suckers and layers also, except Cypress and Juniper. Be carefull to defend your seedling Greens while young, from spring blastings; yet do not choak them for want of good Air.

The *Pin*, Cypress, and ever-green Oak, (the last in special) will scarce endure a removal from seminary, therefore sow them in drills 2 foot intervall one way, and half a foot the other; and the next year after they rise, make a spade-bit trench between the rowes, and work in cautiously, till you discover the running down Root at one side, which you must top with the pruning Knife, and level in the Earth as it was, cut off some side-boughes and thin the head: let them remain two years; then remove and plant them, as is instructed.

Greens that are best worthy our esteem, are *Scots* firr for Standard, *Holly* for Hedges, the Cherrie-bay for Walls, or barren creeping ivy, which will neither blast nor seek supporting.

There is Strawberrie-tree, and Tree night-shade, who are tender. But

Indian and *Spanish* Jasmines, Mirtles, Oleanders, and Oreng-tree yet tenderer, wherefore I am not very curious of them, yet there is severals in this Countrey has them, and are at great pains in governing them, by setting them in cases, small stones at the bottome, filled with Earth mentioned for fine plants Chap. 2. Sect. 6. at the season Chap. 1. Sect. 4. Housing in Winter between latter-end *September* till beginning *May*, giving them fresh Earth as they retire, and expose them *i. e.* takes out the upper exhausted, stirring that below with a Fork (not wounding the Roots) and puts in its place, some rich and well consum'd soil, watering on all occasions with Water, wherein Neats dung is steeped (not touching leaves or stem therewith,) whereof they are sparing while remaining in the House,

except after long froſts, in whoſe extremity is uſed a little Charcoal free of ſmoak ſunk a little in the Floor, and in warme dayes free of froſts and fogs, aquainted with the Air, but ſhut cloſe at night again: and when they may expoſe to the free Air, yet even then ſets them a week in the ſhade, having firſt bruſſed them from duſt, &c. For my part I rather be in the Woods, Parks, Orchards, Kitchen Garden or fields meaſuring, planting, and improving the ground to beſt advantage. However I will here take a little turne among the Flowers.

3. Of Fibrous Rooted Flowers.

July-flowers are the beſt, and are increaſed by offſets, layers, ſlips, and ſeeds. A light loamy Earth well mixt with rotted ſoil of Cowes and Sheep, a year before hand.

Albeit I have raiſed many double by ſeed of my own reaping; yet the ſureſt way to preſerve the beſt, is by laying, becauſe ſeedlings are apt to dy after they have born a Flower: how to lay ſee Chap. 1. Sect. 6. Plant out your layers at ſpring, and give theſe in Potts freſh Earth as the Orenge-tree, and yearly cleanſe the old Roots of withered, dead, and Rotten leaves, and leave not above 3 or 4 Spindles for Flower, (if choice) and nip off ſuperfluous buds leſt they blow and bear themſelves to death: and if any bruſt ſlit, as I directed with double Yelow Roſe. At midſummer ſhade from afternoons Sun a little theſe that blow, ſupport them againſt winds, ſet hoofs amongſt them for catching erwigs their enemies; Water well in drought, ſparing their leaves, preſerve the Choice from too much Raines by laying the Pots on their ſides, ſtrick off the Snow when it lyes too weightie on them, theſe you will not to bear ſeed, cut their ſtalks as ſoon as paſt the Flower.

Stock July-flowers by ſeeds or cuttings; the ſeed of ſingle will produce double, but the more leaves the Mother hath, the doubler ſhall the product be; ſow and plant with carnations or July-flowers, they affect a ſoil with them.

Prim-roſes, Couſlips, and bears-ears by offſets in the ſpring, to when the Flower is paſt, *(viz. July)* they affect a good natural Earth

Earth well mixt with rotten Neats dung: the finer ſorts loves a little ſhade in ſummer, if in Pots or caſes you may tranſport them to ſuch at pleaſure.

Great varieties may be raiſed from ſeed ſowen in Pots, the ſoil aforeſaid mixt with willow Earth in *October*, take head of deep interring bairs ears, ſow them as purſlain: ſet the Potts and caſes with them at the Southſide of a Wall till *Aprile*, at which time they ſpring, and muſt be now retired a little as is ſaid; tranſplant in *July* to Flower next ſpring, and neglect not to Earth up ſuch as are apt to work out of ground namely bears ears.

There is many other as

Noble Liverwort, Spring Gentianella, Virgines-bours, &c. and ar Increaſſed by offſets in the ſpring or by ſeeds at the ſame time. As alſo *Columbins*, *Holihocks*, Cransbill, Campions, and Conſtantinople Flowers, Catch Flyes, Pinks and ſweet Williams, Throat Worts, and Bell Flowers, *&c.* Or Daſies, Violets, Spidder Wort, double Marſh, Mary-gold, by offſets any time when ſpringing.

Of Bulbo and Tuberous Roots there is

Tulipas of great varieties, Increaſes them by offſets when their ſtalkes withers, which is generally about *June*, *July*, *Auguſt*; this is alſo the ſeaſon for other bulbo and tuberos Roots; keep them in a cool but dry place till *Sept*: or *Octob*: and then plant them in a light ſandy earth with fat ſoil an Inch below the bulb, ſo that the roots may reach it, remove every three years and oftener if they affect not the ſoil: they may be raiſed from ſeed but its tedious.

Anemonies the ſame very way as Tulips, except that they require a rich earth mixt with Rotten dung ſo that it be not Rank.

Apply this alſo to Rannuculaſes of the fineſt ſorts.

Cyclamin Roots may be careſully parted in *July* and ſet in the ſoil for Tulips.

Crocuſes and Cholcicums as Tulips, but requires a mixt rich light ſoil. And ſo with

Iriſe Bulboſes (but loves a dry bed) and Narciſſuſes, Ornithogu-

lams, Jacenths, Hesons, Aconits, Hellibors, *&c.*
Likewayes Iris Tuberosus, Crown Imperial, and Lilias of several sorts, Pionies, Cynosorches, *&c.*

Indian Tuberose is tender. See Esq: *Evelin's* Kallendar.

There ar many Annualls may be sowen in pots, and plunged in hot bed, and some under glass covers especially them sowen in Autumne, as

Amaranthus, Marvel of *Peru*, flos Africanus, Convolvulus, *&c.* In *Aprile* you may sow them on the cold bed, if good fat warme earth, together with double Marygold, Cyanus, Nigella, Delphinus, Anterhinum, double garden and Corne Popies, Fox Gloves, Flos Solis, Flos Adonis, *&c.*

But if you would be further satisfied in the varieties of plants, consult the Learned and most Ingenious Mr. *James Sutherlands* Catalogue Phisick Gardner at *Edinburgh.*

4 I spoke before of preserving plants by housing. There is some that cannot endure the house, who must be set at the South wall, the potts sunck three Inches below the surface, covered with glass, first clothing them with sweet and dry Moss: or in prepared boxed beds with folding Glass frames to lift up and down at pleasure; because in all seasonable warme blinks of the Sun & shoures they may be discovered of all that covers them, thus: Treat choice Ranunculas, Anemonies, Amaranthus, *&c.* Neglect not to repair their earth as (in sect: 2) the Oreng Tree.

Plants standing dry in Winter, earthed up, or the Earth made firme about them are good means of preservation. Neglect not to cleanse all your plants of under and withered leaves, superfluous offsets, &c. See Chap. 1. Sect. 10. and see Part 1. Chap. 6. Sect. 7. For the orderly planting of Flowers. And I hope the Reader will excuse for this brevity, seeing each Chapter herein would merit a Book, neither will leasure permit me at present.

AN

APPENDIX

Shewing how to use the Fruits of the Garden.

1. THIS necessarly depends upon the 5th and 6th Chapters, of Fruits and Herbes eatable.

Gather Aples and Pears when full ripe, especially these for keeping, or for Cyder in a dry day, clear but not frostie, in large Baskets lin'd with Straw Matts, upon the 3 footed or standing leathers: at least lay Straw under, if you shake them, and suffer not too many at once thereon.

Gather Apricocks, Peaches, Plumes, Cherries, with your hands into clean Baskets, when full ripe, whither for eating Green, preserving in Sugar, &c. drying, or for Vines; as also currans, Barberries, Rasberries, Goosberries. The Cucumbers for pickling must be small *i. e.* e're their seeds grow firme; as Goosberries for baking, boyling, sauces.

Artichocks e're they grow too hard, let these for pickling be tendereſt. Let the purslain for pickling be hard and old, lay it a day or two in the Sun to mortifie. That which you eat Green must be tender. Eat Beans and Peas Green, but do not slice down the Beans, nor break the Peas stalks, else them left thereon cannot fill. You may cut off the Beans with a Knife; and for the Peas, hold with the one hand and pull with the other.

Asparagus when tender *i. e.* about 3, 4, or 5 Inches high.

Lettice

Lettice when young, but its beſt Cabbaged. Succory, Endive, Sellery Blanched. Creſſes, Parſly, Chervil, Burnet, when young and tender. Sorrall, Spinag, beets before they ſhoot for ſeed. And ſo is Arage, Marygold, Bugloſs, Burrag. Shallot and onions when their ſtalks withered, tho ſhibols are eaten green. Leeks any time before they ſhoot to ſeed. Coleflowers when firme and white e're they ſpoil; And ſo cabbage when hard. Sweet herbes any time either green or dryed, but gather them in their prime for drying.

Liquoriſh no diſh but drink. ſee Chap. 6. Sect. 4. where you will alſo find ſeaſon of Scorzonera, Beetrave, Carrot, Turneep, Skirret, Parſneep, Potatoes, &c.

2. Beſides what is ſaid above of planting and ſowing at Spring, ſummer, and harveſt for ſomes longer continuance, as alſo of raiſing ſome earlyer than naturally, by means of hotbeds, and what I might ſay of retarding others by tranſplantations, &c. There be wayes of preſerving them out of the garden, &c.

Aples and Pears may be carryed into the conſervatory or ſtorehouſe in the large baskets between two men; which muſt be a cloſe but cleanly and wholſome Room floored, lyned, and filed with boards and ſhelves of the ſame round: let them ſweat a little on the floor with clean oat ſtraw under them; then dry and lay them Aple-thick on the ſhelves, opening the north windows in fair, clear, windy dayes, eſpecially at firſt that it may dry up the ſuperfluous moiſture. turne them ſomtimes, and in froſts cover them with matts, and ſhut cloſe the houſe: ſome of the choice you may wrap in dry papers ſingly, and often viſite, that you may remove any that begin to rott: for they quickly affect the reſt.

The way of preſerving Cherries, Plumes, &c. In Wine, Cyder, Hony, or ſugar is caſie, as alſo of drying them in the oven.

And you may pickle barberries in Vinegar, and ſalt well dryed, and ſugar: to each pound and a half fruit, a pound of ſalt cold again,

again, ¼ pound ſugar beat to powder; put them by layings in a well glazed Earth pot, and when they have ſtood a whole week well ſtopt powr in a mutchken Vinegar to each pound fruit; if you find the ſawces too ſharp put as much ſugar as ſalt.

Range cucumbers the ſame way, and ſtrew ſalt, and Vinegar till they be all covered, and you may add a little dill and ſweet bay leaves for odour, and cover them cloſe 40 dayes unbroken: then pare when you ſerve them up.

For *Artichocks* diſſolve two large handfuls of great Salt (that is dryed on the fire in a pan) in one mutchken Vinegar and three of fair water, mix them while the Salt is yet hot, (but put not the liquor on the fire) boyl the Artichocks till the leaves come off eaſily, and while the cleanſed ſtools are yet warme, you may have 3 nutmegs, 3 drop cloves, 1½ dram mace, ¼ ounce white pepper, ½ ounce cinamon, beat to fine powder and ſtrew upon them; then pack them in the pot with five or ſix ſpoonfuls the liquor on each ſtratum: when all potted poure on the reſt of the pickle, and ſtop cloſe.

To pickle them green put to every pound of cleanſed ſtools an ounce Salt dryed and ¼ ounce ſpices laſt nam'd mixt in a morter; and having dawbed the ſtools full of holes, throw the powder thereon, when the pot is full, melt as much butter as cover them over two Inches, and when cold, cover cloſe with leather.

To pickle Beet-raves, boyl and put them in glazed pots, with whole pepper and as much Vinegar as cover all over, ſtoping them cloſe.

Aſparagus may be parboyled and pickled as Artichocks: and ſo may green peas with cods.

Purſlain as Cucumbers: and ſo may taragon, ſampeir, broom-buds, &c.

Lettice, Endive, Sellery, &c. By blanching and Ranging among ſand in Cellers. Cabbage by Hanging. Roots by Houſing, Sanding, &c. As is ſhewed in Chap: 6. Sect: 2. and 4. Sweet her-

bes as well as phyſicall by Hanging to dry in ſome open Room not in the Sun as ſome adviſe.

Put marygold flowers in paper bags near the chimney till they paſs hazard of mouldineſs; do juſt ſo with true ſaffron. But becauſe few knows how to order it, obſerve, to part its offſets and plant with other bulbs at half foot diſtance in the beds or bordurs, it flowers in *Septem*: then be careful to go through in the mornings and gather the ſaffron *viz:* the thrums that are in the midle of the flowers, it bears not well till the 3d, 4th and 5th year; then you muſt remove it. But to the matter in hand.

3. As for the uſe of theſe fruits, the phiſicians knowes their medicinalls, the cook their ordering in the Kitchen, the Gard'ner how to propagate and Improve them. For deſcription and medicinal uſes ſee our Countrey-man Doctor *Moriſons* herbal; and for mechanicall uſes, *Evilins* works.

To have diſhes and drinks of them obſerve what followes.

4. Of diſhes, as of Aples you may have baked without any ingredients ſave ſugar, Roſted alone, and ſo boyled, fryed by ſhavers, with a little freſh butter, ſtew'd betwixt two plates, having cleavedand taken out their cors, add a little ſweet butter and ſugar. Of Pears you may have Roſted and boyled as Aples, alſo ſtoved being cut in fower and put dry in a ſtoup or oven of white Iron; and ſo ſet in the pot among water to boyl, you may have both Aples and Pears green with cheiſe.

Cherries are excellent baked, and ſo goosberries. Apricocks, Peaches, Plumes, Cherries, Currans, Goosberries, Rasberries are all excellent diſhes green, or conſerved. Strawberries and Red wine, or ſweet cream.

Cucumbers pickled for ſallad to roſted mutton: or if ripe, ſlice and lay them an hour in Salt, and ſo powr off their water. Artichocks are either pickled or freſh, boyled and eaten with ſweet beaten butter.

Beans and peas boyled with ſavory and thym ſagot, ſerved up with ſweet butter beat amongſt them, and ſet a little on a coal or chaffing.

Boyl

Boyl *Asparagus* in fair water, and ſerve it up with a little ſweet butter, beat *i. e.* tumbled in the Sawce-pan above the coal. The young ſhoots of colworts will ſerve the ſame way.

Purſlain may be eaten green with ſugar and Vineger ,or Oyl, ſtew'd with meat, beſides the pickled.

Lettice green as purſlain; and ſo creſſes, Chervil, Burnet, burrage flowers, and wood ſorrall.

Spinag is excellent ſtoves being boyled with lamb or Veall with a little ſorrall therein, as alſo choped diſhes thereof with butter.

The ſame way uſe beets; alſo make green broth of them with leeks, fagot of thyme and parſly. In ſome ſtoves and broths you may put Arag, Marigold leaves, Violet leaves, Straw-berrie leaves, *Bugloſs*, Burrage, and Endive. In Pottage put Iuice of ſorrall, fagot of thime and parlſly, and in moſt of broths.

In the ſawce or gravy of Roſt mutton and capon and in all ſtewed diſhes bruiſe ſhallot or Rub the diſhes therewith.

You may ſtove leeks with a cock. Onions may be baked with a little butter if you want meat: alſo make uſe of them with roſt meat eſpecially geeſe, and to moſt freſh fiſhes in which parſly and thyme fagot is mainly uſed.

Boyl coleflowers in water mixt with a little milk; then pour it off and mix them in the ſtew-pan with ſweet butter ſeaſoned with ſalt, and ſo ſerve them up about boyld mutton.

Boyl Cabbage with Beef, reſerving the top of the pot to powr on (when diſhed up) about the beef.

Boyl Scorzonera, peale off its broun rind, wherein conſiſts its bitterneſs, ſlice and fry it with butter.

When ſkirrets ar boyld and pealed, Roll them in flowre, and fry with butter.

Boyl and peal parſneeps, chop and bruiſe them well, powre on butter, and ſet them on a coal, and if you pleaſe ſtrew a little cinamon upon them.

Carrots are ſo uſed or only diſhed by ſhavers. Beet rave boyld

pealed, ſhaved, and when cold ſerved up with vinegar and ſugar: beſides the pickled.

Beet-raves, Parſneeps, carrots are very good ſerved up whole or ſliced about meat, as turneeps uſually with fat broth poured thereon.

Potatoes as Parſneeps: or for want of butter take ſweet milk.

5. Of drinks, as of Aples to make cyder: I cannot name our cyder Aples, for I uſe to mix all the ripe at once in the orchard, that is of a fine Juice and eaſie to ſeparat from the fleſh, and pears that have plenty of Juice and hard fleſh though harſh.

In France they extoll the Rennet cyder, in England the Hereford Redſtrake. (Which in France they ſet at naught) they ſpeak of genetmoil and muſts, ſome pipens and parmains. And for Perry the bromsbury, and Ruddy horſe pear. All which and many more *Hugh Wood* Gard'ner at Hamiltone has to ſel. But now the different ſoils begets alterations in fruits beſides the climate; yet both defects may be a little helped: The firſt by uſing all diligence to prepare the ground throughly, as is directed in Chap. 2. Fallowing is a moſt commendable eſſay.

The ſecond by graffing and regraffing upon early: good fence and ſhelter round the ground are very conducible.

To make this excellent Wine, provide trough and beatters, preſs and harbag, lagallon and tappering fat, barrels and hogſheads; (for even by the common ſcrew preſs I have made a hogſhead cyder in a day) be ſure your veſſells be ſweet, elſe you ſpoil all; white Wine, Sack-caſk or ſuch as keept cyder before. I have heard of cyder-caſk 3 Inches thick in the ſtaves, which I believe is of great Advantage in preſerving the liquor: but if any be tainted, put a little unſtaked Lyme Stone, and a little water in the Barrell, and ſtop it cloſe; when ſtood a little while and jumbled, pour out and waſh clean, that will cure.

The fruit being gathered ripe, as before, let them ly ten or twelve dayes, if ſummer fruit; and near the double of that time, if winter ſorts: (but the late ripe that gets froſts is not good cyder)

cyder) mix not with unripe ones, neither ſuffer leaves nor ſtalks among them. When they are ſmall beat, put them in the harbag within the preſs fat, and ſo ſcrew them hard again and again; and emptie it thereof and put in more, and do as before: and empty the receiver into the tappering fat, and therein cover it cloſe with a canvaſs till the morrow at that time, before you tun it; where the groſs lee may fall to the bottom, then draw it off at a tap three Inches from the bottom, leaving that dreg behind. (The which may go among the preſſings for water cyder) the clearer you tun it into the barrels, the leſs it ferments, and that's beſt cyder: for often cyder ſpends its ſtrength to free it ſelf of the groſſer parts; therefore while your cyder ferments, leave the vent pin looſe, but keep cloſe the bung for preſerving the prodigall waſt of its ſpirit; and as ſoon as the working begin to allay, drive the vent pin dead to: and this will be perhaps in a fortnight, if it begins to work Immediatly, ſome times not till the Spring. But keep faſt the pin till it begins to work, and that you mind to bottle of it, do as ſoon as fully clear and fine; which is ordinarly at Spring. Put a plum great of fine white loaf ſugar in each bottle, and above all, make your corks faſt and cloſe; then ſet them in the celler amongſt ſand.

To make the water cyder put ½ as much water as you had cyder upon the new preſſed marce, to ſtand covered in tubs 4 or 5 dayes: then preſs them and boyl the liquor, ſcumming it till the ſcum ceaſe to riſe faſt, then take it off (for too much boyling waſteth its ſpirits) and put in tubs or coolers, and when cold tun it up; when done working (which will not be ſo violent as beſt cyder) make the pin faſt and in a ſhort time, its for drinking. A little ginger, cloves, juniper berries or ſuch may be boyl'd in it, if they pleaſe your taſt.

The making of Perry differs not from that of cyder.

To make Cherrie Wine, to every pound ripe fruit ſtampt, put a Chopin Spring-water and ¼ pound fin white ſugar, boyl the water and ſugar, ſcum it and put in the juice of your Cherries, let it boyl up again, take it off the fire, run it through a hair-ſive and when its throughly cold, put it in a ſtone pot, and after 6 or 7 dayes

draw it into bottles, putting a bit loaf ſugar in each; in a quarter year you may fall a drinking, it will keep a year; if you would have it ſtronger, then uſe no more water than ſugar.

After the ſawe manner you may make wine of Raſps, Currans, Goosberries. or

Take currans very ripe, bruiſe and ſtrain them, and to every pint of the Iuice put a pound and ¼ ſugar into a ſtone or earthen pot, ſcum it often, and at a weeks end draw it off, and take out the ſetlings and put in the liquor again; do this till it be fine, then bottle it; and at a weeks end if it be not fine in the bottles, ſhift it into other bottles.

Gather your Goosberries e're they be too ripe, and for every three pound ſtampt fruit, a chopin of water and a pound ſugar: ſteep them 24 houres, then ſtrain them, put the liquor into a a veſſell cloſe ſtopt a fortnight or three weeks, then draw it off if you find it fine, otherwayes ſuffer it longer; and if not fine yet rak it.

Its uſuall to make it thus unboyl'd, becauſe it contracts a broun colour in boyling.

To every pint Raſps a pound ſugar, let them ſtand two dayes in an earthen pot, often ſtirring and bruiſing them; then put them in a woollen bag to hang up 24 houres and more till the liquor drop out into a ſtone pot, ſuffer it there till fermented and ſcum'd, and at a weeks end (or ſooner if fine) bottle it, and at another weeks end ſhift it into freſh bottles, that you may leave the ſetlings behind: thus ſhift them ſo long as you ſee any ſettlement, the which you may put in a bottle by it ſelf.

Of ſome ſorts of Plumes, as damaſons, &c. may be made wine.

That called Cherrie brandie, is a bottle half full of geens, fill'd up with brandie, ſomtimes Jumbled a little; and in a moneths time is fit for drinking. Or if you put the like quantity of Goosberries inſtead of Cherries; that will make the brandie very Delicious.

Cherries beſt for wine are blackheart, morella. I think the red

red geen moſt excellent. See Chap. 3. Sect. 2.

Of Gooſberries the great Chryſtal, and of currans the great Dutch red, alſo the red Raſp.

To have Ail of Liquoriſh, ſlice it very ſmall and pour Water on it when at the boyl: there cover it cloſe till the morrow, powr off this wort, and on more hot-water, to ſtand as long to ſearch it throughly, add your worts together and boyl with a little dry Wormwood *Carduus Benedictus*, but the greateſt difficulty is to barme it when cold, as wort of malt; yet the ſtronger you make it, the eaſier it will take, or if you have the conveniency of ſettlings of good wort of malt to boyl with it; that will facilitate the work.

To have good metheglin, take one part of clarified Hony and eight parts of pure Water and boyl well together in a Copper veſſel till the conſumption of the half: but while it boyls take off the ſcum, and when done boyling and beginnes to cool, tun it up, and it will work of it ſelf; as ſoon as done working, ſtop it very cloſe. Some adviſes to bury it under ground three moneths, and that to make it loſe both ſmell and taſt of Hony and Wax, and taſt very like Wine. I uſe to add dry Roſmary and ſweet Marjorum in boyling: ſome barms it as Ail; which I have practiſed effectually.

6. To know what Fruits and Herbes to make choice of for our plantations:

The *French* Fruit ſucceeds not well with us, in *England* are good Aples, but *Holland* for Ston-fruit eſpecially Peaches and Cherries, and *Scotland* for Pears.

The beſt Aple for the Table is the Golden Pepin, we have alſo Rennets, Ruſſets, &c. very good. And for the Kitchen the Codling, Lidingtown, and Rubies, with hundreds for both.

But the beſt Pears for the Table are *Engliſh* Bergamot, Swanegg excellent Pears, and red Pear Achans, &c. The wardens are good Keepers and Kitchen Fruit, and multitudes more.

Of Cherries, the Kentiſh, and Morella, &c.

Of Plumes, Primordials, Muſſell, Imperial, &c.

The common and Orenge Apricoks, the newington and nut-

nutmeg Peaches, (Peaches bears better with us than Apricocks.)

The *Portugall* Quince, and thinſhell'd Wallnut.

Of Goosberries great White, great Red, and great Yellow.

Of Currans the great red *Dutch*, early red, and the white.

Of Raſps, both the white and red.

The great red Straw-berrie, and the *Virginian* which is more early.

Of Artichocks both the great and the prickly.

Great white Beans, and white Kidnees. Of Peas Barnees, Hotſpures, Haſties, and the ſickle Peas, &c.

If you can get Hordium nudum that is naked barley, and ſow as I directed with Peas, it yealds an incredible increaſs.

The *Dutch* Aſparagus and Cabbage lettice. The ſorrall that uſually ſhoots not for Stoves, &c. And Yellow wood and *French* for Sallades. The white Beet and ſmooth Spinage. Curled Parſly and Creſſes. Shallot and Roccumbol, *French* leeks, and *Straws-brugh* onions.

Candy Cole-flower and our own great *Scots* white Cabbage.

Criſp Tanſie, and curled Spearmint. Sweet Fennell, and common Roſmary. Sweet Marjorum and red Sage.

The black Scorzonera and Orenge Carrot. The ſmall round ſmooth Turneep. Smooth *Dutch* Parſneep and ſmall Radiſh clear as Chryſtall. See Chap. 6. for more.

Its to be noted, that the ingenious and moſt induſtrious, *Hugh Wood* Gard'ner at *Hamiltoun* can acommodate you with the above mentioned Fruits, together with multitudes of other ſorts, whither *Engliſh*, *Dutch*, or *Scots*.

THE CONCLUSION

Proposing SCOTLANDS Improvement.

THere is no way under the Sun so probable for improving our Land as Incloſing and Planting the ſame: Therefore I wiſh it were effectually put in practice.

FINIS.

Becauſe of the Authors abſence there are ſeveral things eſcaped the preſs: wherefore the Reader is earneſtly deſired to amend theſe here marked, viz.

Pag. 1. line 22. theſe garrets Read theſe, Garrets Pag. 3. l. 20. Centre at leaſt, the r. Centre, at leaſt the Ibid l. 31. confirments r. confinements P. 9. l. 21. 90 degrees r. 60 degrees P. 11. l. 20. fig. 2. r. of fig. 2. P. 17. l. 17. Pole r. Pole ſo, P. 27. l. 9. from by hawing. r. from weeds by hawing. Ibid l. 11. train r. trimm P. 28. l. 25. ſide, each r. ſide of each P. 32. l. 3. drawing r. draining. Ibid l. 18. recovering, r. recountring, Ibid l. 24. conveniency; in viewing there r. conveniency in viewing; there P. 33. l. 9. make r. marke P. 35. l. 25. know reaſon r. know no reaſon P. 36. l. 25. move r. more. P. 41. in the example of diviſion the figures above the dividend ſtands one place too farr towards the right hand P. 52. l. 26. 23. r. 32. P. 60. l. 10. Cirumpoſition r. Circumpoſition Ibid l. 31. ſow r. ſaw P. 61. l. 32. by r. be P. 70. l. 16. heatly r. heathy P. 78. l. 3. ſeed in the wood, they r. ſeed, in the wood they P. 84. l. 24. fill them r. fell them (*i. e.* to cut off a Tree) P. 89. l. 28. marie r. marce. P. 92. l. 17. know r. knew The Page before 96. l. 4. apricocks; train, ſpread, r. a Peacocks train ſpread; Pag. 96. laſt line head the r. head than the P. 101. l. 10. or r. ar Ibid l. 26. diſtance from another. r. diſtance: another Pag. 103. l. 1. cherault r. chervil P. 105. l. 7. graws r. gnaws Ibid l. 19 Balme. r. Bawme, P. 108. l. 29. chalk r. check P. 112. l. 33. ,0 r. or P. 113. l. 29. Ranunculaſes r. Ranunculuſes P. 121. l. 21. r. one third P. 122. l. 4. ſawe r. ſame

THE

GARDNERS KALENDAR

Shewing

The most seasonable times for performing his

HORTULAN AFFAIRS,

Monthly throughout the Year:

AND

A Catalogue of such dishes and drinks as a compleat Garden can afford in their seasons.

Published for the Climate of SCOTLAND
By JOHN REID *Gard'ner.*

EDINBURGH,
Printed by DAVID LINDSAY, at the foot of *Heriot's*-Bridge, 1683.

READER,

AS *in this little* Kalendar *thou will find when; so in my Book (Intituled the* Scots-Gard'ner*) thou will find how, to performe the particulars.*

The Gard'ners year is a circle as their labour, never at an end. Nevertheless their terme is

NOVEMBER.

CONtrive or forecaſt where, and what you are to ſow and plant. Trench and fallow all your vacant grounds. Prepare and mix ſoils and compoſts throughly: miſs not high-way Earth, cleanſings of ſtreets; make compoſitions of dungs, ſoils, and lyme.

Lay bair Roots of Trees that need, and dung ſuch as require it. Plant all fruit Trees, Forreſt-trees, and ſhrubs that loſe the leaf, alſo prune ſuch. Plant cabbage. Sow haſties for early peas in warme grounds but truſt not to them.

Gather the ſeeds of holly, yew, aſh, &c. Ordering them as in Chap: 3. furniſh your nurſeries with ſtocks.

Shelter tender evergreen ſeedlings. Houſe your Cabbag, Carrots, Turneeps: and any time e're hard froſts your Skirrets, Potatoes, Parſneeps, &c. Cover Aſparagus, Artichocks, as in the laſt moneth. Sow bairs-ears, plant Tulips, &c. Shut the conſervatory. Preſerve your Choiceſt Flowers. Sweep and cleanſe the walks of leaves, &c. Stop your bees cloſe ſo that you leave breathing vents.

Garden Diſhes and Drinks in Seaſon, are

Cabbage, Coleflower, Onions, Leeks, Shallot, &c. Blanched Sellery, Succory, Pickled Aſparagus, Purſlain, &c. Freſh Parſneeps, Skirrets, Potatoes, Carrots, Turneeps, Beet-rave, Scorzonera, parſly and fennell Roots.

Aples, Pears, &c.

Cyder, Perry, wine of Cherries, Raſps, Currans, Goosberries, Liquoriſh, Hony, &c.

DECEMB.

TRench and prepare grounds. Gather together compoſts plant Trees in nuſeries. and ſow their ſeeds that can Endure it. Gather Firr ſeed, holly berries, &c. Take up liquoriſh. Continue your care in preſerving choice Carnations, Anemonies, and Ranunculuſes from Raines and froſts. And keep the green-houſe cloſe againſt the piercing colds. Turne and refreſh your fruit in a clear and ſerene day. Sharpen and mend tools. Gather oziers and haſſell Rods and make baskets in ſtormy weather. Cover your water pipes with leitter leſt the froſts do crak them, feed weak bees.

Garden Diſhes and Drinks in ſeaſon.

Colworts, Leeks, &c. Houſed Cabbage, Onions, ſhallot. Several dryed ſweet herbes. Houſed Parſneeps, Turneeps, Skirrets, Carrots, Potatoes, Beat-rave, Scorzonera, parſly, Fennel Roots. Pickled Cucumbers, Barberries, Artichocks, Aſparagus, Purſlain, &c.

Houſed Aples, Pears. Conſerved Cherries, Plumes, Peaches, Apricocks, &c.

Wine of Aples, Pears, Cherries, Liquoriſh, Hony, &c.

JANUARY.

JANUARY.

PRepare the ground, ſoils and manures. Fell trees for mechanical uſes. Prune Firrs, plant Hawthorn Hedges, and all Trees and Shrubs that loſe the leaf weather open. Alſo prune the more hardy and old planted. Dung the Roots of Trees that need, draining exceſſive moiſture, gather Graffs e're they ſprout, and near the end Graff; begin with the Stone Fruits. Gather Holly-berries, Firr huſks, &c. Secure choice plants as yet from cold and wet, and earth up ſuch as the froſts uncovered.

Feed weak bees, alſo you may remove them.

Garden Diſhes and Drinks in ſeaſon.

Coleworts, Leeks, &c. Dry ſweet Herbes. Houſed Cabbage, Onions, Shallot, Parſneeps, Skirrets, Potatoes, Carrots, Turneeps, Beat-rave, Scorzonera, Parſly and Fennel Roots in broth.

Pickled Artichocks, Beet-raves, &c. Houſed Aples, Pears, and other conſerved Fruits.

With Cyder and other Wines as before.

FEBRUARY.

PLant any Trees or Shrubs that loſe the leaf, alſo lay and circumpoſe ſuch for increaſs, ſee *June*. Likewayes ſow all your Seeds, Kyes, Kirnells, Nuts, Stones; alſo the ſeeds of ſeveral Greens, as Holly, Yew, Philyrea, Laurells, &c. Prune Firrs, &c.

Continue to deſtroy Vermine.

Graffing is now in ſeaſon, ſee the laſt moneth.

Prune all Trees and Shrubs except tender Greens. Nail and dreſs them at the wall. Cover the Roots of Trees layed bair the fore-end of Winter, if any be. Plant Hawthorn Hedges, Willows, &c.

Plant Liquoriſh, Potatoes, Peas, Beans, Cabbage. Sow Parſly, Beets, Spinage, Marygold, and other hardy Pot-herbes.

Let carnations and ſuch ſheltered Flowers get Air in mild weather. But keep cloſe the Green-houſe.

Now you may remove bees and feed weak ſtocks.

Garden Diſhes and drinks in ſeaſon.

Cole, Leiks, ſweet Herbes. Onions, Shallot, houſed Cabbage, Skirrets, Turneeps, Parſneeps, Potatoes, Beat-rave, Scorzonera, Carrots, beſides Parſly and Fennell Roots.

Pickled Beat-rave, Artichock. Cucum: Houſed Aples, Pears, and other conſerved Fruits with Cyder and other Wines and drinks, as above.

MARCH

REdelve, mix, and Rake your ground for Immediat uſe. Delve about the Roots of all your Trees. Yet plant Trees and rather greens. Alſo prun ſuch except the Roſinious. Propagate by laying circumpoſition, and eſpecially by cuttings. Sow the ſeeds of moſt Trees and hardy greens. Cover theſe Trees whoſe Roots lay bair, and delve doun the dungs that lay about your young Trees all winter, covering on leitter again topt with Earth to prevent drought in ſummer: this is a material obſervation and more eſpecially for ſuch as are late planted. Slit the bark of ill thriving Trees. Fell ſuch as grow croked in the nurſerie. Graffing is yet in ſeaſon, (but too late for ſtone fruit) cut off the heads of them Inoculated.

Set peas, beans, Cabbage, Aſparagus, Liquoriſh. Sow parſly, beets, Endive, Succory, Bugloſs, Burrage, Sellery, Fennell, Marigold. Plant ſhollot, garleeks, Potatoes, Skirrets. Sow Onions, Lettice, Creſſes, Parſneep, Beet-rave, Radiſh, &c, And on the hotbed coleflour, and if you pleaſe cucumber, &c.

Slip and ſet phyſick herbes, *July*-flowers, and other fibrous Rooted flowers. Be carefull of the tender, the peircing colds are now on foot. Turne your fruit in the Room but open not yet the windows.

Catch Moles, Mice, Snails, Worms, deſtroy frogs ſpawn, &c.

Half open paſſages for bees, they begin to fit, keep them cloſe night and moring: yet you may remove them.

Garden Diſhes and Drinks in ſeaſon.

Both green and houſed herbes and Roots: alſo Pickled, Houſed, and conſerved fruits: with their wines as in the former months.

APRILE.

APRILE.

PLant Holly Hedges and Hawthorn too if not too foreward. Ply and ſheer Hedges. Nail and prun Wall-trees, &c. Sow and plant firrs, and other greens. Slip and ſet ſage, Roſemary, thym, Rue, Savory, and all fibrous Rooted herbes and Flowers. uncover and dreſs ſtrawberries. Plant Artichocks, *ſlip them and* delve their plottes. Set Cabbage, Beans, Peas, Kidnees. ſow Aſparagus, Parſly, Beets, and Beet-card. Set Garleeks, Shallot, Potatoes, Skirrets, Sorral. ſow Onions, Leeks, Lettice, Creſſes, Radiſh, Orach, Scorzonera, Carvy, Fennel, &c. And on the hotbed Cucumbers, Coleflowers, Purſlain, ſweet Marjorum, Baſill, Summer Savory, Tobaco, &c.

Set Strawberries, Violets, July-flowers, &c. Alſo ſow the ſeeds of july flowers. &c. Sow all your Annuall flowers and Rare plants ſome requiring the hotbed. Deſtroy Moles, Mice Worms, Snails. Lay, Beat, and Roll gravel and graſs. Fall to your mowing and weeding.

Open the Doors off your bee-hives now they hatch.

Garden Diſhes and Drinks in ſeaſon.

Onions, Leeks, Colworts, Beets, Parſly, and other herbes: Spinage, Sorral. Scorzonera, green Aſparagus, Lettice and other Sallads. Pickled Artichocks, Beet-rave, Barberries, Cucumbers.

Houſed Aples and Pears, Conſerved Cherries, Plumes, Peaches, Apricocks, Goosberries, Currans. Alſo the wines of Aples, Pears, Cherries, Liquoriſh, Hony, &c.

MAY.

M A Y.

PUll up ſuckers and haw about the Trees. Rub off unneceſſary buds. Sheer or clip Hedges. Prun tender Greens, (Not the Roſinious) bring furth the houſed ones refreſhing & trimming them. *Plant* all ſorts of medicinal Herbes. Sow all ſweet ones which are tender.

Gather Snails, Wormes, catch Moles.

Sow Letice, Creſſes, Purſlain, Turneep, Radiſh, Peas, &c. Continue weeding and watering.

Near the end watch the Bees ready to ſwarm.

Garden Diſhes and drinks in ſeaſon.

Coleworts and other Herbes, (being eaten with contentement is better than a fatted Ox without it) ſage (with Butter,) Leeks, Parſly, Thyme, Marjorum, ſorrall, Spinage, &c. Scorzonera, Aſparagus, Letice, Purſlain, and other Sallades and Pot-herbes.

Pickled Artichocks, Barberries, Beet-rave, Cucumbers, houſed Aples and Pears for many uſes. Early Cherries, Straw-berries, near the end.

Cyder, Metheglin, Liquoriſh Ail, &c.

JUNE.

CLeanse about the Roots of Trees, Suckers and weeds, water their Covered Bulks: especially the new planted.

Fell the long small ill-train'd Forrest-trees in the nurserie within half foot of the ground Unbind graffs. Prun all Wall and Standard Trees. Towards the end you may Inoculat. And Increase by circumposition.

Gather Elm seed and sow Immediatly.

Transplant Coleflowers, Coleworts, Beets, Leeks, Purslain, &c. In moist weather; at least water first the ground if dry.

Sow Peas, Radish, Turneep, Letice, Chervil, Cresses, &c. Destroy Snails, Worms, &c.

Begin to lay carnations or July-flowers: shade, support and prun such as will blow. Water pots and thristy plants. Weeding and mowing is in season, and so is distillation.

Bees now Swarm, look diligently to them.

Garden Dishes and Drinks in season.

Cole, Beets, Parsly, Sorrall and other Pot-herbes. Purslain, Letice, and other Sallads. Radish. Scorzonera, Asparagus. Green Peas and Artichocks. Green Goosberries. Ripe cherries, Raips. Currans, Straw-berries.

Housed Aples and Pears.

Cyder, Metheglin, &c.

JULY.

FAllow ground as ſoon as the crop comes off. Prune and purge all Standard-trees. Ply, Nail, Prune, and dreſs your Wall-trees. Pull up ſuckers and weeds. Haw and Water where needful. *Inoculat Fruit-trees, Shrubs*, rare Greens, Flower-trees; Increaſe the ſame by laying. Clip your Hedges after Rain. Suffer ſuch Herbes and Flowers to run to ſeed as you would ſave: Cutting the reſt a handful from the ground.

Sow Turneep, Radiſh, Lettice, Onion, Cole-flower, Cabbage, and Coleworts in the *full Moon*. Near the end ſow Beets, Spinage, &c. You may plant Strawberries, Violets, Camomile. Lay July-flowers. Plant their ſeedlings. Slip and ſet Hypaticas, Bears-ears, Couſlips, Helibors, &c. Take up Bulbo and Tuberous ones that are dry in their ſtalks (if you mind to change their places) and keep till *September*, but ſome would be ſet immediatly.

Supply voids with potted Annualls. Lay Graſs and Gravell. Make Cherrie and Rasberrie Wine, &c.

Prevent the Bees latter ſwarmes, Kill Drons, Waſps, &c.

Garden Diſhes and drinks in ſeaſon.

Beets and many Pot-herbes and Sweet-herbes.

Beet-card, Purſlain, Lettice, Endive, &c.

Cabbage, Cole-flower, Scorzonera, Beetrave, Carrot, Radiſh, Turneep, Peas, Beens, and Kidnees, Artichocks, Strawberries, Raſps, Currans, Goosbeeries, Cherries, Plumes, ſummer Pears and Aples, Cyder, Metheglin and other Wines.

AUGUST.

FAllow bordures, Beds, Nurſeries, and the bulks of Trees. Yet Inoculat. Ply and purge Trees. Pull up ſuckers and weeds. Clip Hedges. Gather the Black-cherrie and Morella Stones. Gather Mezerion berries. Gather the *ſeeds* of moſt Herbes and Flowers. Cut your Phyſick-herbes. In the beginning ſow Cabbage (thô I confeſs its too late. See the laſt moneth) Beets and Beet-card, Spinage, Black radiſh, Chervil, Letice, Corn-ſallade, Endive, Scorzonera, Carvy, Marygold, Angelica, Scurvy-graſs, &c. Take up ripe Onions, Garleeks and Shallot, Unbind buds Inoculated. Cut and ſtring Strawberries. Lay July-flowers. Sow Columbines, Holyhoks, Larks-heells, Candytuffs, Popies, and ſuch as can endure Winter.

Take up your bulbs and plant as in the laſt. Sift the ground for Tulips and Gladiolus. Plunge in potted Annualls in Vacants. Keep down weeds by hawing, &c. Lay Graſs and Gravel, Beat, Roll, and mow well. Make Goosberrie and Curran Wines, &c.

Towards the end take Bees, take the lighteſt firſt; thoſe who are near heaths may differ a little. Deſtroy Waſps, ſtraiten the paſſage by putting on the hecks to ſecure from Robers.

Garden Diſhes and drinks in ſeaſon.

Many Pot-herbes and Sallades, Cabbage, Coleflower, Beet-card, Turneep, Radiſh, Carrot, Beet-rave, Scorzonera, Peas, Beans, and Kidnees, Artichocks, Cucumbers, Aples, Pears, Plumes, Apricocks, Geens, Goosberries, Currans, Raſps, Strawberries, &c.

Cyder, Metheglin, Cherrie Wine, Curran Wine, Goosberrie Wine, Raſpberrie Wine, &c.

SEPTEMBR.

FAllow, Trench, and level ground. Prepare pits and bordures for Trees. Gather plan ſeed, Almond, Peach, and white Plum Stones. Gather ripe Fruits. Plant furth Cabbage. Remove bulbs *and plant them.* Refreſh, Trame, and Houſe your tender Greens. Refreſh and trim pots and caſes with July-flowers and other fine Flowers and plants, Carrying them to pits, ſhelter, and covert, giving them Air, &c.

Towards the end gather Safron.

Make Cyder, Perry, and other Wines, &c.

Straiten the entrance to Bee-hives, deſtroy Waſps, &c.

Alſo you may now remove Bees.

Garden Diſhes and drinks in ſeaſon.

Varieties of Pot-herbes and Sallades, Cabbage, Cole-flower, Peas, Beans, and Kidnees, Artichocks, Beet-card, Beet-rave, Scorzonera, Carrots, Turneeps, Radiſh, Cucumbers, Aples, Pears, Apricocks, Peaches, Nectarines, Quince, Grapes, Barberries, Filbeards.

Cyder, Liquoriſh Ail, Metheglin, and Wine of Cherries, Raſps, Gooſberries, Currans, &c.

OCTOBER.

GAther Winter Fruits. Trench and fallow grounds (mixing with proper soil) to ly over the Winter. Prepare dungs and mannures, mixing and laying them in heaps bottom'd and covered with Earth. Plant Hawthorn Hedges, And all Trees that lose their leaves; *Also lay their branches. Prun Roses* Gather seeds of Hassell, Hawthorn, Plan. Ash, Beach, Oak, Aple, Pear, &c. Cut Strawberries, Artichocks, Asparagus, covering their beds with dung and Ashes. Earth up Winter Sallades, Herbes, and Flowers, a little. Plant Cabbage, &c. *Plant Tulips*, Anemonies, and other Bulbs. Sow the seed of Bairs-ears, Cowslips, Tulips, &c Beat and Roll Gravel and Grass. Finish your last weeding and mowing. Lay bair leopered Tree Roots and remove what harms them: also delve and dung such as require it. Drain excessive moisture wherever it be. Pickle and conserve Fruits. Make Perry and Cyder.

You may now safely remove Bees.

Garden Dishes and drinks in season.

Coleworts, Leeks, Cabbage, Cole-flowers, Onions, Shallot, Beans. Blanched Endive and Sellery. Pickled Asparagus, Purslain, &c.

Scorzonera, Beet-rave, Carrots, Turneeps, Parsneeps, Potatoes, Skirrets, Artichocks, Cucumbers, Aples, Pears, Plumes, Almond, &c.

Cyder, Perry, and Wine of Cherries, Currans, Goosberries, Rasberries, Ail of Liquorish, Metheglin, &c.

FINIS.

Young.

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